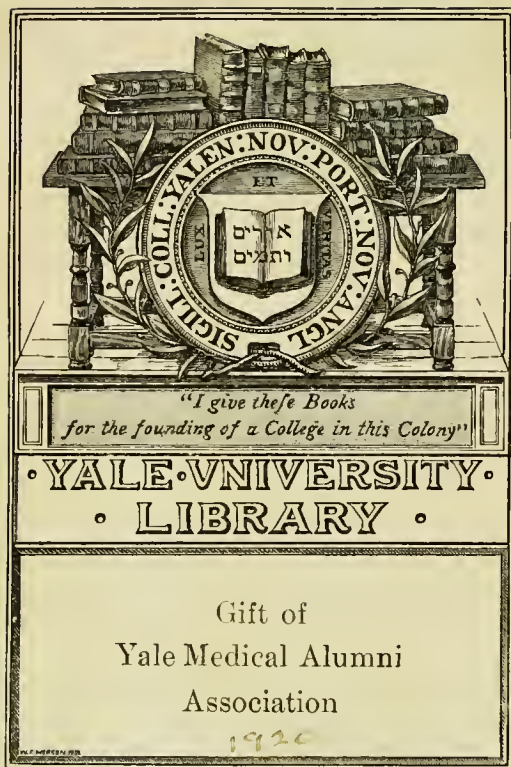


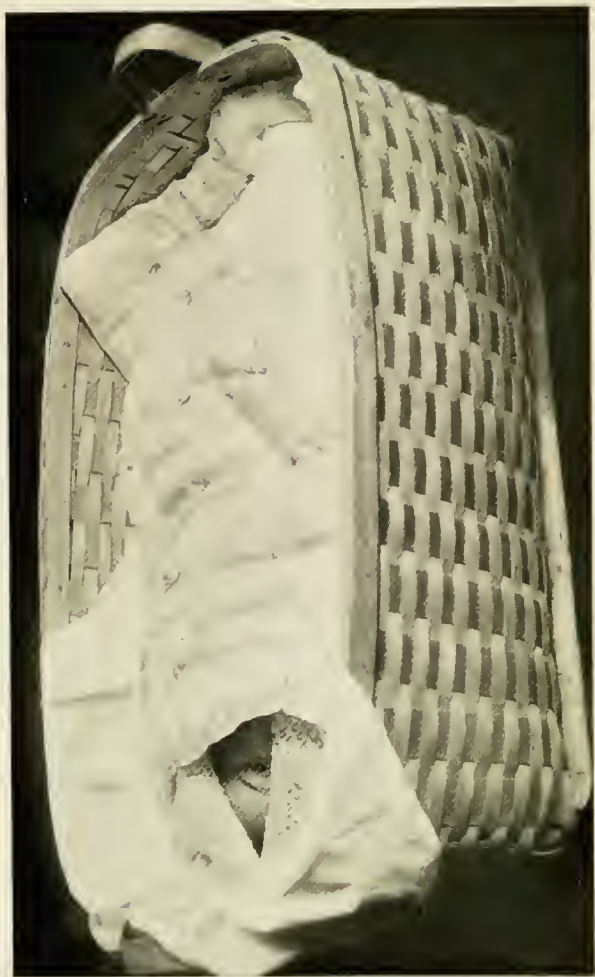
INFANCY AND CHILDHOOD

A Popular Book on
The Care of Children

WALTER REEVE RAMSEY



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"WRAPPED IN WARM BLANKETS AND OUT OF HARM'S WAY"
[Page 39.]

SCIENCE AND CHILDHOOD

*A Manual of the Care
of Infants*

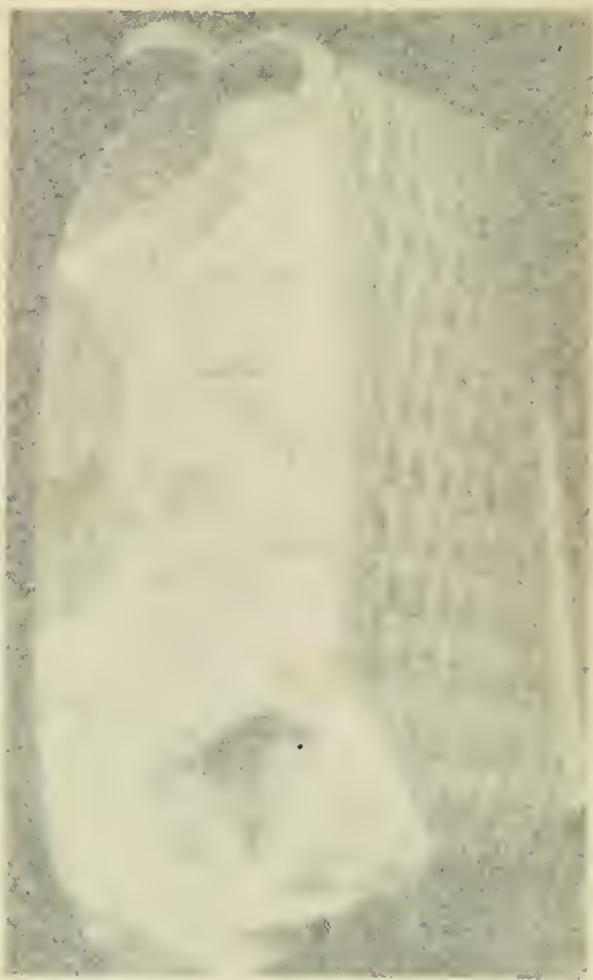
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WILEY & SONS
DUPLICATE COMPANY

681 Fifth Avenue

1911



INFANCY AND CHILDHOOD

*A Popular Book on the Care
of Children*

BY

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NEW YORK

E. P. DUTTON & COMPANY

681 FIFTH AVENUE

1916

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7-361
5168

DEDICATED
TO
MY WIFE AND LITTLE BOY, FROM
WHOM MUCH OF THE INSPIRATION
IN THE WRITING OF THIS BOOK
HAS COME

PREFACE

In the writing of this book I have had constantly in mind the now recognized fact that, in order to accomplish anything in the way of preventive medicine, there must be an intelligent coöperation of the public.

Whatever progress is made in child-welfare will be largely along educational lines.

The future well-being of the average child which is normal at birth depends to a great extent upon the physical and moral care it receives. For the first years, which in many respects are the most important in the life of the individual, this care devolves largely upon the mother and nurse.

The old-time mysticism, which still to some extent surrounds medicine, must disappear and the public be taught what it may rightfully expect of itself and the physician.

It does not follow that the mother need have a technical knowledge of medicine. She should, however, have an intelligent idea of foods and their values and at least a knowledge of the fundamentals of hygiene.

She should have a sufficient knowledge of disease, especially the contagious forms, to understand their significance, the manner in which they are carried, and the means of prevention.

For example, she should know that a croup which persists for many hours, with progressive difficulty in breathing, may be a laryngeal diphtheria and that a physician should be summoned immediately, as the child's life may be in great danger.

She should know that a high fever, severe vomiting and diarrhea, or any other severe symptom, is never due to teething but to some other cause.

With the hope of aiding her to a better knowledge of such practical points as these, this book has been written.

W. R. R.

ST. PAUL, January 3, 1915.

INTRODUCTION

The interest in child welfare during the past few years has been especially marked. Men and women in all walks of life have joined hands in advancement of the cause. Societies have been formed in almost every city in America and Europe for the prevention of infant mortality and for the general improvement of conditions relative to child life.

Why this world-wide interest, this great concern so lately awakened?

While the advancement of science has greatly diminished the mortality among adults, the infant death rate has remained practically at a standstill.

In the United States one infant out of every seven which come into the world dies before it has reached the end of the first year. When one considers that most of these infants are normal at birth the condition is all the more shocking.

The belief generally held that infant mortality is simply a matter of natural selection, that the fittest survive and that the race is thereby made stronger, is no longer tenable.

The fact is that many children although they survive the first year are much less "fit" as a result

of illness and defective feeding, and not a few of them succumb later or carry through life the effects of a bad early environment. What, then, is the cause of this appalling death rate in infants?

Ignorance and bad social conditions are responsible for the greater part of the preventable death rate in infants. Ignorance on the part of society in general and of parents in particular concerning the fundamental conditions underlying child life and development.

Many women are forced to do work which undermines their health and makes them unfit to give birth to healthy children.

The substitution of artificial for breast feeding is responsible for a large percentage of the deaths among infants. The breast-fed baby has six times as many chances of surviving the first year as the artificially fed infant.

Crowding into cities where the cost of living is so high that neither the mother nor the infant has the proper housing or food, is also responsible for many deaths.

Until recently the infant has been regarded as a miniature adult and was so treated even by the medical profession.

It is now known that the physiology of the infant is vastly different in many respects from that of the adult. In the infant we have to do with a sen-

sitive, unstable and rapidly developing organism which must be supplied with the elements necessary to its growth, while in the adult it is only necessary to repair body waste. How can we prevent this unnecessary sacrifice of child life?

By educating fathers and mothers concerning their own care and the care of their children. By improving social conditions so that women employed will have proper sanitary conditions under which to live and work, a living wage and a proper knowledge of food and food values.

How can this be done?

Young women must be taught more at home and at school concerning the fundamentals which will fit them to be wives and mothers.

Proper legislation if enforced would do much to remedy some of the evil conditions.

Among the educated classes much may be taught through proper literature.

For immediate results we must depend to a great extent upon properly educated physicians, nurses and social workers, who will devote much of their time to spreading useful knowledge and to uprooting false ideas, whenever and wherever they may be found.

We are interested not only in saving the lives of infants but also in promoting their physical and moral welfare, so that they shall be the greatest possible benefit to society and to themselves.

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INFANCY AND CHILDHOOD

INFANCY AND CHILDHOOD

I

STRUCTURE OF THE BODY

The body of the infant consists of:—

1. The skeleton, or bony framework.
2. The soft parts, which are made up of ligaments, muscles, blood-vessels, nerves, digestive and urinary organs, etc.
3. A liquid portion, consisting of blood and lymph.

THE SKELETON

Cartilage. The skeleton of the infant, unlike that of the adult, contains a large amount of cartilage. This is relatively soft compared with bone, but later, by the process of multiplication of the bone cells and the deposition of lime salts, it is transformed into bone proper.

The skeleton, or bony framework, including the cartilage, serves a variety of purposes. It serves as a protection for the most vital and sensitive portions of the body—the brain, which is enclosed within a bony shell, the skull; the spinal cord, which

is enclosed within the spinal canal; and the lungs and heart, which are enclosed within the chest wall.

The Chest Wall. The chest wall serves not only as a protection to the organs mentioned, but also, in connection with certain muscles, as an aid to breathing. The bones also serve as an attachment for the muscles which by their contraction, produce the power of motion.

Ligaments. The different bones in the infant are rather loosely held together by fibrous ligaments, so that there is a considerable amount of freedom of motion in all directions and there may be even some over-riding of the ends of the approximating bones.

Change in Shape of Head at Birth. This is particularly true of the bones of the skull, which during a difficult birth so overlap, that for a short time the shape of the head may be changed. The bony framework of the head can be roughly divided into two parts: the cranium, which contains the brain, and the bones of the face.

THE SKULL

The Jaws. In the infant the upper portion of the skull is much greater in proportion to the lower, than in the adult. This is a result of the undeveloped condition of the jaws.

The cranium is composed of thin curved plates of bone rather loosely held together.

Sutures. The spaces between the opposing edges of the different bones in the skull are called sutures.

Fontanels. The large, four-sided opening which exists at the upper, forward part of the skull, at the juncture of the two frontal and two parietal bones, is called the large fontanel, and the small triangular opening at the juncture of the two parietal bones with the occipital, is called the small fontanel. (*See cut facing page 42.*)

The Brain. The brain lies within the skull and its growth and development have undoubtedly much to do with the size and shape of the head.

Time of Closure of the Fontanels. The sutures, as well as the small fontanel, close normally at the end of the first year, while the large fontanel does not normally close until the end of the fifteenth to eighteenth month. Closing of the fontanels before the end of the first year may mean a limited brain development, a condition known as microcephalus. The nonclosure of the large fontanel after the eighteenth month, usually indicates the presence of rickets.

THE TEETH

At birth the teeth are well formed in the jaws and continue to grow so that, at the end of the sixth or eighth month after birth, the first teeth usually

pierce the surface of the gums. The last ones appear normally about the thirtieth month.

The process of teething, therefore, contrary to what is generally believed by the laity, is practically continuous, extending from the sixth to the thirtieth month. (For "Teething" see page 99.)

THE SPINE

The spine or vertebral column consists of thirty-three segments or vertebræ placed one on top of the other, separated by cushions of connective tissue, the whole column being held together by ligaments.

The Vertebræ. These vertebræ consist largely of cartilage. The vertebræ form a bony canal which serves to protect the spinal cord from injury.

Spinal Nerves. Through small openings, or foramina, come the nerves which carry the impulses to and from the brain.

Curvature of the Spine. As the erect position of the spinal column can be maintained only by muscular contraction, and since in the young infant these muscles are undeveloped, the erect position of the body should never be enforced, as abnormal curvatures may result.

DEVELOPMENT OF SOFT PARTS OF THE BODY

The Skin. During the first few days after birth the skin of the new born infant is often intensely red. This redness gradually fades until, at the end of the second week, the skin assumes a pink color which from then on is characteristic of the normal breast infant.

The Hair. The fine hair which covers the body of the new born usually disappears after a few weeks, as does the copious growth of hair which often occurs on the head. This hair may persist for a considerable time and then fall out, to be replaced by another crop less profuse and frequently of a different color.

The skin of the new born baby is extremely tender and particularly susceptible to irritation either by undue friction or by irritating substances, such as impure soap or the discharges from the body, urine, stool and perspiration.

Color of Mucous Membrane. The tissue of the healthy breast infant is relatively richer in fat than that of older children.

The tissues of the healthy infant are characteristically firm and resilient. The first evidence of the disappearance of the fat from the body is shown by the flabby character which it assumes in comparison to the firm feeling of normal flesh.

The mucous membranes of the new born infant are also extremely red at birth but gradually become paler and assume after a couple of weeks the natural pink color.

THE HEART AND CIRCULATION OF THE BLOOD

Oxygenation of the Blood. The heart begins to beat and send blood through the vessels as early as the second month of foetal life. Since, however, the blood of the unborn child is dependent for its oxygen upon the placenta of the mother, its circulation is somewhat different from that of the child after birth. At birth, when the cord is severed, the child begins to breathe so that all blood must go through the lungs in order to get oxygen.

Heart Valves. Valves and vessels which were necessary before birth now become unnecessary and must permanently close before proper circulation is possible. If for any reason the free circulation through the lungs is interfered with, the blood will not receive sufficient oxygen and will become blue in color. Such a condition exists in the so-called "blue baby."

Frequency of Heart Beat. The frequency of the heartbeat during infancy is considerably greater than in older children and adults. At birth the heart beats 120 to 140 times per minute. At the end of the first year the frequency has been

reduced to 100-110. From this time on the heart-beat gradually diminishes in frequency, until at six years it averages 80-90 per minute. These are averages and are to be taken only when the child is quiet and undisturbed.

RESPIRATION

The lungs are situated within the chest wall and, together with the heart and large blood vessels, practically fill that cavity. It is by means of the lungs that the blood comes in contact with the air, taking up oxygen and giving up the waste gases such as carbondioxide.

The act of breathing begins immediately after birth.

The frequency and rhythm of the respiration in infants is considerably different from that of older children and adults. The breathing is more frequent and irregular in character than in later years.

Chest and Abdominal Breathing. There is comparatively little movement of the chest wall in infants and most of the breathing is done by means of the diaphragm, that is, so-called abdominal breathing. Gradually as the infant grows older and as the chest muscles become more developed the chest breathing increases.

Character of Breathing. The rhythm of the breathing in infants is irregular. This irregularity

is not infrequently the source of much concern to mothers, as it is particularly noticeable during sleep.

Frequency of Breathing. While the frequency of breathing in adults is 18–20 per minute, in infants during the first month it is as high as 30–40, and even in the second year it is 25–30 per minute.

Nose and Mouth Breathing. Air should normally enter the body through the nose. When an infant does not breathe through its nose, and the mouth remains open during sleep, it means some obstruction in the nasal passage, either in the nose itself, or behind the nose, usually in the form of adenoids, which condition is not infrequent even in the new-born infant.

THE BRAIN AND NERVOUS SYSTEM

Growth of Brain. At birth the brain and central nervous system are, at least to all appearance, well developed. As early as the eighth month after birth the brain of the infant is so well developed that, in comparison with the brain of the adult, no great difference can be detected. The growth of the brain during the first year is very rapid, in fact the growth during the first year equals, or exceeds, the growth during the entire remaining life of the individual.

Many of the bodily functions at birth are but poorly developed.

Of all animals the young infant is by far the most helpless, and for the first few years or so is entirely dependent.

Organs of Sense. The organs of sense during the first few weeks show very little development of function, although at an early age the infant is able to appreciate heat, cold and pain. Taste usually develops early; sweet things are taken better than sour or bitter.

Eye Movements. The eyes of the baby during the first few days, or even weeks, make all sorts of incoördinate movements and at times a positive squint is present. This, however, is but temporary and is due to the lack of muscular control. An infant acquires the ability to fix its eyes upon objects at about the third month.

Winking and Shedding Tears. Winking is seldom seen in the new-born baby, as is also the shedding of tears. After the first few weeks the winking of the eyelids becomes more frequent and tears begin to appear.

DIGESTIVE TRACT

The digestive tract begins at the mouth and ends at the anus.

Sucking. The act of sucking is a complicated procedure and one which demands for its consummation the following organs: The jaws, the tongue, the cheeks and the roof of the mouth. If any of these parts are deficient in development the act is liable to be impaired.

Digestion of the milk begins in the mouth through the influence of the secretion from the salivary glands. The digestive action of these secretions is at first very feeble but increases considerably during the first three months.

Gastric Secretion. After passing through the mouth the food enters the esophagus and by muscular contraction is carried to the stomach, where it is acted upon by the secretions of that organ (gastric juice). The most active ferment in the infant stomach is the *rennet*, which results in the curdling of the proteid element of the milk. Pepsin and hydrochloric acid are present in the stomach of the new-born infant in small quantities. These secretions are undoubtedly rather inactive during the first weeks of life.

THE STOMACH

The form and position of the stomach of the infant is not unlike that of the adult, occupying rather an oblique position in the upper left side of the abdomen just below the heart under the diaphragm and extending from left to right.

The small end of the stomach is closed by a circular muscle known as the *pylorus*. This opens at intervals as a result of chemical and nervous influence combined, and the contents are forced through by rhythmic muscular contraction into the small intestine.

THE INTESTINES

Small Intestine. The intestinal canal is divided anatomically into two parts, the small and large intestine. The length of the intestinal canal is relatively longer than in the adult. In the infant the intestinal canal is approximately six times the length of the body, while in the adult it is only four and a half times as long.

Digestion in the Small Intestine. The milk is largely digested in the upper portion of the small intestine, through the influence of the secretions from the pancreas and the liver.

The Large Intestine and Its Functions. Very little digestion occurs in the large intestine, although it has some ferments capable of digestion. A great deal of the absorption of the liquid portion of the food, however, takes place in the colon (large bowel).

Bacteria in the Intestinal Canal and Their Function. The whole intestinal tract at birth is free from any form of bacteria, but after twenty-

four to thirty-six hours it contains millions of bacteria of many varieties, some of which undoubtedly have much to do in assisting in the digestion and assimilation of the food.

II

GROWTH AND DEVELOPMENT

Average Weight at Birth. Although there is considerable variation in the size of individual infants at birth, the average for boys is about seven and a half pounds and for girls about seven pounds.

There is almost always some loss in weight directly following birth, which will be explained in chapter on Breast Feeding, page 61.

Gain in Weight. During the first three months the gain of a normal infant is from four to six ounces per week, or from one to one and one-half pounds per month. It is rather the exception that infants will maintain a gain of two pounds per month during the first three months.

Gain in Weight During the First Year. At six months the weight should be about double that at birth, which for the entire time is an average of a little over one pound per month. During the second half of the first year the gain in weight is not quite so rapid as during the first half.

At the end of the first year the weight should be approximately three times that at birth.

This tremendous gain in weight during the first year explains the large amount of food needed per pound of body weight during this period.

After the first year the gain in weight is not so rapid.

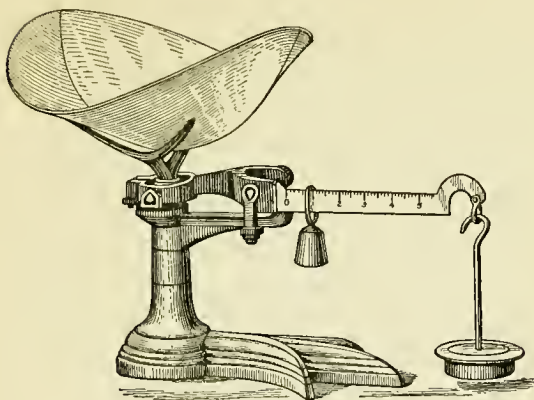
Gain in Weight During Second Year. During the second year the child should gain three-fourths of a pound per month, or eight or nine pounds during the year.

Gain in Weight to Fifth Year. During the third year it should gain about four or five pounds, during the fourth about four pounds, and during the fifth, four and a half pounds, so that at five years the child should weigh forty or forty-two pounds.

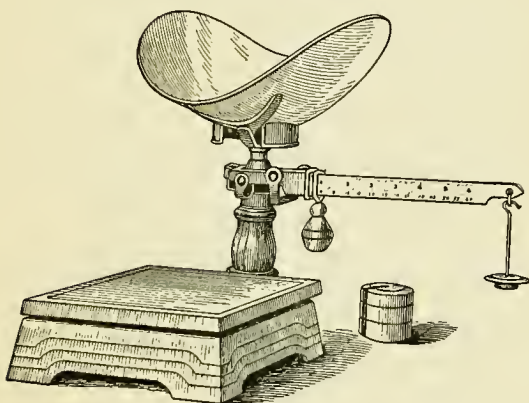
The average weight of boys is one to one and a half pounds greater than girls at the same age.

Development of Boys and Girls During Puberty. At the time of puberty, which comes earlier in girls than in boys, the girls forge ahead of the boys. Later, however, the boys regain their superiority in weight and maintain it until maturity.

An approximately normal increase in weight of an infant is of vital importance. When an infant does not gain in weight for any length of time, there is always something wrong either with the feeding or with the child itself.



FAIRBANKS BABY SCALE
Weighing to 35 lbs.



FAIRBANKS SCALES
Weighing to 200 lbs.

Weighing. Infants should therefore be weighed regularly, at least weekly, during the first year, and at least once monthly during the second and third years.

The gain in weight is not the only thing in the development of an infant to be considered; in fact a too rapid increase in weight may be a detriment and usually means over-feeding.

Increase in Length During the First Year. The growth in length and a proper general development of the body are equally important with the increase in weight.

The average length of the male infant at birth is twenty inches and of the female nineteen and a half inches. During the first month the infant increases in length from one and a half to one and three-fourths inches, and during the second month slightly less. This increase gradually becomes less after the third month, and at the end of the first year the increase is about one-half inch per month. There is a gain in length of about eight inches during the first year, three and one-half during the second year, and three inches during the third year. From the third to the eleventh year the gain is about two and a half inches per year.

At the age of puberty there is a more rapid gain in height corresponding to the increased gain in weight.

Development During Puberty. During this period of rapid growth there is an unstable condition of the nervous system, the significance of which will be discussed under the chapter on "Puberty."

TABLE SHOWING THE AVERAGE WEIGHT, HEIGHT AND CIRCUMFERENCE OF HEAD OF BOYS:

The weight of girls at birth is on the average about one-half pound less than boys. Their height is only slightly less:

AT BIRTH:

Weight	7½ pounds
Height	20½ inches
Chest	13½ inches
Head	14 inches

ONE YEAR:

Weight	21 pounds
Height	29 inches
Chest	18 inches
Head	18 inches

TWO YEARS:

Weight	27 pounds
Height	32 inches
Chest	19 inches
Head	19 inches

THREE YEARS:

Weight	32 pounds
Height	35 inches
Chest	20 inches
Head	19¼ inches

FOUR YEARS :

Weight	36	pounds
Height	38	inches
Chest	20 $\frac{3}{4}$	inches
Head	19 $\frac{3}{4}$	inches

FIVE YEARS :

Weight	41	pounds
Height	41 $\frac{1}{2}$	inches
Chest	21 $\frac{1}{2}$	inches
Head	20 $\frac{1}{2}$	inches

SIX YEARS :

Weight	45	pounds
Height	44	inches
Chest	23	inches

SEVEN YEARS :

Weight	49 $\frac{1}{2}$	pounds
Height	46	inches
Chest	23 $\frac{1}{2}$	inches

EIGHT YEARS :

Weight	54 $\frac{1}{2}$	pounds
Height	48	inches
Chest	24 $\frac{1}{2}$	inches

NINE YEARS :

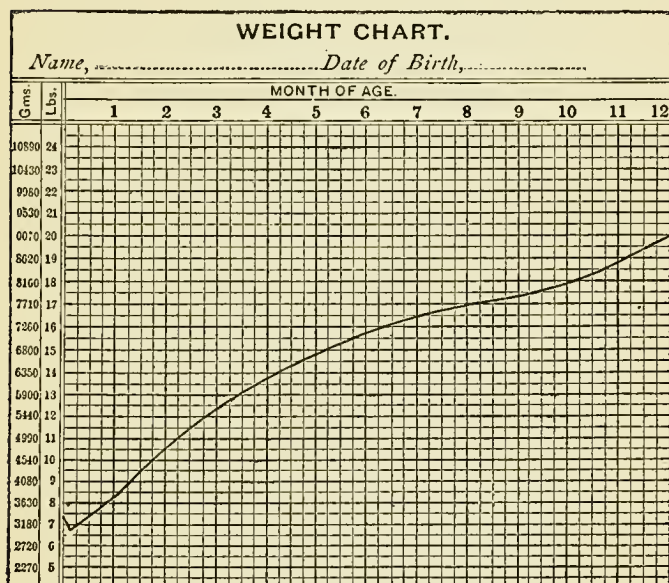
Weight	60	pounds
Height	50	inches
Chest	25	inches

TEN YEARS :

Weight	66 $\frac{1}{2}$	pounds
Height	52	inches
Chest	26	inches

The weights for the first four years are without clothes. After that the weights include ordinary house clothes. (After Holt.)

Some slight variation may occur from these



WEIGHT CURVE OF THE FIRST YEAR

measurements without having any special significance. For instance, a child born of small parents will usually be smaller than one born of large parents and the weight and measurements will be cor-

respondingly less. Any wide divergence from these averages means something abnormal. For example, if a baby which weighed seven pounds at birth should at three months weigh only eight pounds, one would be certain that there was something wrong; or if an infant at one year should have only the length of an infant of six months it would point strongly to "Cretinism" or some other abnormal condition.

Significance of Head Measurements. If the head should measure only fourteen inches at the end of the first year we should be suspicious as to the brain development, or if at one year it measured twenty inches instead of eighteen we would feel the probability of a Hydrocephalus being present.

Loss in Weight After Birth. During the first few days there is usually a loss in weight "which does not occur in other animals." The so-called physiological loss in body weight is proportionate to the size of the child; the greater the weight the greater the loss. The loss continues from three to six days and then begins a gradual gain.

It is generally taught that the loss is regained in from seven to ten days. This is frequently true where the mother has already nursed one or more infants, but in the case of a first born the period required to regain the loss is usually much longer,

extending from two to three weeks.✓ During this time no anxiety need be felt unless the infant continues to lose, in which case it must not be weaned but given additional food, after each breast feeding. The amount of food needed can only be determined by weighing the baby before and after each feeding.

THE NORMAL INFANT

It is usually not difficult to determine whether an infant is physically normal. There are definite measurements and other standards to which an infant must conform in order to be considered normal.

The determination of the nervous and mental condition of an infant is, however, much more difficult. Even an experienced physician may make mistakes.

It is particularly important in infants for adoption to ascertain whether there is any serious physical or mental defect.

In order to demonstrate the character of the special senses, examinations are made to determine the infant's sensibility to certain influences. For example, the sensibility of the skin is determined by tickling and by touching it with hot and cold objects; the hearing, by making a noise such as

the ringing of a bell; the sight, by bringing bright objects before the eyes and watching to see if they follow them.

It is difficult, or even impossible, to determine the mental development of infants before the fifth or sixth month.

NATURAL MOVEMENTS OF THE BODY

The natural movements of a normal infant are characteristic and by close observation much information may be secured.

The impulsive movements of the hands, feet and legs, as well as those of crying and laughing, are characteristic.

In contrast to the impulsive movements are the reflexive movements or those which arise from irritation; for example, the contraction of the pupils to light, swallowing, sneezing, or yawning. To reflexive movements are added other instinctive actions, such as sucking and sticking the fingers in the mouth.

SUCKING THE FINGERS

The sucking of the fingers is not necessarily indicative of hunger but is an instinctive impulse.

The movements of the infant which are at first involuntary gradually become voluntary. The impulsive movements become less frequent and the

reflexive movements much more frequent. The movements of expression, as laughing and crying, will depend more upon how the child feels, whether it is happy or whether it approves or disapproves.

Movements of the head after the third month are voluntary. From then on the child learns more complicated movements and combines these with the will, so that in time it walks, observes what is done by others, talks, etc.

Mental Development. "At the third to fourth month an infant begins to follow objects with the eyes; at four to seven months it begins to take an interest in its surroundings, laughs, plays with its toys and begins to assume some of the character of an individual." At about eleven to twelve months the child will stand by taking hold of chairs and other objects, and by the thirteenth to the sixteenth month it will usually begin to walk alone. (*See illustration facing page 42.*)

Rickets as Cause of Delayed Development. The normal time for the development of all the above mentioned functions is impeded in the case of premature infants, constitutional weakness, long illness and malnutrition from any cause. Rickets is one of the common causes for delayed physical development.

The different appliances for teaching children to walk are rarely to be advised.

DEVELOPMENT OF THE SPECIAL SENSES

Instinct. Instinct in the new born is much less developed in the infant than in the young animal. The young infant must therefore be much longer protected than any other animal. The senses of hunger, thirst, fatigue are early developed in the infant, as evidenced by crying and the perfect contentment which follows when hunger and thirst are appeased.

Taste and Smell. The sense of smell is but little developed in the new born, but is present to some extent even at birth. The sense of taste is already fairly well developed in the baby and by certain grimaces he makes his distaste known.

The sense of like and dislike in many children however only appear by rather extreme irritation.

Development of Hearing. Directly after birth all infants are deaf, as the organs of hearing only begin to functionate after the eustachian tubes, which lead from the throat to the middle ear, become free from secretion and are well inflated with air. This occurs within the first few days.

In the first few weeks, although the infant can hear, it is not sensitive to sound and reacts but little.

Sight. The same is true of the sense of sight, for although the pupils react to light the infant

shows no evidence of being conscious of seeing the light.

Movements of Eyes. In the new born the eyes do not coördinate, that is, act together. For example, one eye may be open while the other is closed, or one eye may be moved while the other remains still, there may be a distinct squint. The eyes move together when the child develops the power of fixation (about the fourth month).

It is important that the mother understand the relative times for the development of the different senses; otherwise she is likely to worry, much to her own and the infant's detriment.

Talking. There is a great difference even in normal children in their ability to talk. Most children at twelve months are able to say, "Papa," "Mamma," and to form short sentences at the end of the second year. Not infrequently, however, children who understand perfectly do not form words or sentences until two and a half or three years. If they are not deaf, and if the understanding is good, no concern need be felt. The fact that a child is fluent at two years does not necessarily imply better brain power than one whose oratorical powers are less developed.

The development of speech, with the exception of a few words learned mechanically, is preceded by an understanding of the speech. The speech

center in the brain is very slow to develop in some children and very rapid in others.

When a child at two years makes no effort at forming words, the advice of a competent physician should always be sought to determine the possibility of deaf-mutism. Deafness can usually be detected as early as the sixth or eighth month.

Coördination of Muscles. If a child does not take things in its hands and stick them in its mouth when it is five or six months old, or if in attempting to grasp objects it does so with fingers extended and only closes its hands with difficulty and with in-coördinate movements approaches the mouth, it should be at once examined by a physician as it is probable that the child is suffering from an affection of the nervous system.

Test to Determine the Mental Development. In determining the mental development of children after one year the Kuhlman modification of the Binet-Simon system¹ will be found useful in skilled hands.

THE MENTAL AND MORAL DEVELOPMENT OF THE CHILD. "HOME TRAINING"

The importance of "home training" in the minds of parents depends upon the extent of their

¹ A Review of the Binet-Simon System for Measuring the Intelligence of Children, by F. Kuhlman, Director of Physiological Research, School for Feeble-minded, Faribault, Minn.

belief in heredity. The less importance they attach to heredity the greater is their responsibility. Parents are prone to attribute all the good traits in their children to their own efforts, and all the bad ones to heredity, coming of course from the other side of the house.

It is the opinion of most authorities on children that in the great majority of cases, where a child is unruly, has an uncontrollable temper and other bad traits, the difficulty is more with the "training" than with heredity. "With the exception of children actually suffering from an abnormal condition, there are no defective children, only defective conditions."

"The moral and mental makeup of the individual, his nature and character, is partly inherited and partly developed. Therefore the part which inheritance and development plays in the moral and mental influence is of widely different importance. Temperament, for example, is an inherited possession, the over or under development of which may through the development of self-control be much restricted, the temperament, however, remaining the same through life."

"The intelligence is also inherited, and through the influence of the home and the school may be brought to a much higher point of development, but it is from the beginning there and will scarcely

be fundamentally changed by any influence. That knowledge and capability, during the whole lifetime, may be developed and increased, and that the will to work, the pleasure taken in the work, may be influenced by training, has been positively demonstrated." On the other hand, the training has a much greater influence on the character than on the intelligence and temperament, especially during the first years of life.

"The first five years are the most important for the development of the character of the individual. The later influences do no more than develop the already sprouting seed."

The literature¹ of the past few years is rich in books concerning the rearing of children, their physical, mental and moral development.

The question arises, at what age we may begin to teach a child, or, in other words, begin its education?

Education and Memory. The education may begin as soon as the mind is sufficiently developed to hold impressions and long before the intelligence

¹ Harrison, Elizabeth — *The Study of Child Nature*; Froebel — *The Education of Man*; Montessori — *The Montessori Method*; Hall, G. Stanley — *Youth*; Addams, J. — *The Spirit of Youth and the City Streets*; Adler, Felix — *Moral Instruction of Children*; James — *Talks on Psychology and Life's Ideals*; Henderson, C. Hanford — *What it is to be Educated*; Conklin, Edward — *Heredity and Environment*; Galloway, Thos. Walton — *Biology of Sex for Parents and Teachers*; Ellis, Havelock — *The Task of Social Hygiene*.

is sufficiently developed to determine cause and effect.

The memory is, however, very early developed. This may be demonstrated by the way in which the very young infant may be taught regularity. For example, the regularity with which infants awake for their meals and the ease with which with some persistency these hours may be changed.

We now know that each child is born with its limitations and possibilities. We do not know, however, what these possibilities and limitations are. Therefore, it is the duty of parents and the State to encourage the fullest development possible in each child. This development should be considered as three-fold: physical, mental, and moral, and also in its relation to society as well as the individual child.

Many of the difficulties in the way of mental and moral growth are effects of improper diet, insufficient sleep, and too little exercise in the open air. Many, on the other hand, are directly consequent upon improper direction and discipline. If parents, fathers as well as mothers, could be made to realize the importance of the first five years of the child's life in the formation of such habits as concentration, observation, and self-control, and the importance of well thought out ideas toward which

to aim, the question of discipline, with the directing of work and play and the necessary correction, would not be simply one of moods on the part of those in authority, as is so often the case. Regarding the mental development, three important points should be emphasized: concentration, observation, and the training of the imagination. One of the best and simplest means of teaching children to observe and concentrate is through the study of nature. This study should be encouraged early, so that these simple, healthful pleasures may develop into real resources for later life. Another of the simple ways to develop concentration and observation is through the analysis of good pictures. Parents who encourage or allow their children to go from one thing to another aimlessly, without finishing anything begun, or to take over long to perform the simple duties required of them, are weakening their powers of concentration, which are so invaluable in their school work and later occupations. Some children, through constant diverting on the part of the parents, lose what natural concentration they have. It is well to supervise and direct work and play to definite ends and to encourage children to carry out their ideas. But, on the other hand, when children are legitimately occupied and happy, they should not be interrupted more than is necessary. The aimless standing or walking around the



OUTDOOR ACTIVITIES WHICH KEEP CHILDREN HEALTHY

streets that so many of the well-to-do children are allowed to indulge in, does not prepare them for definiteness of purpose later on. If a walk is to be taken, let a definite objective point be chosen. When a child goes out to play, let it be encouraged to plan what it is to do. Toys such as blocks for building bridges and houses, modeling clay, drawing and sewing cards, are excellent for the in-door occupation of smaller children, with tools and books for older ones; for out-of-doors, sand-piles, wagons, barrows, balls, etc., and later, gardens. Children who are taught early to dress and undress, help in passing things, and run errands, are being trained in concentration and observation.

In regard to the imagination, it is usually a question of stimulating it or holding it in check. Certainly, a ready imagination means a quicker appreciation of another's point of view and greater sympathy with all conditions of society. It means that we are less dependent for our happiness on our material well-being. It means greater resourcefulness in work and play. It means that city children, by the happy art of "make-believe," can have dogs and ponies, and even the wild animals of the forest, as their companions, with no expense and no trouble with the neighbors. They can be kings and queens, with palaces in their sand-piles and dolls as subjects, or dream of distant lands to

conquer from the top of the old apple-tree. To play games with the wind or a shadow is often the first step toward a later faith in the unseen forces of the world. On the other hand, an over-developed imagination may lead to an unstable nervous system.

In the moral sphere there is no more important point than that of self-control. When we consider all that self-control may mean to the child, to the adult, and to society, too great emphasis cannot be laid upon its training to that end. Beginning with the first week in infancy, when the baby cries to be taken up when taking-up is not good for it, self-control may be taught in many simple ways, but to be a structure which will endure, it must be built upon a firm foundation of good inheritance and health and grow slowly from day to day through training in matters in themselves small, but on the whole, in the light of the future, of tremendous importance.

One simple way of teaching self-control, from early childhood on, is not to remove objects about the room, or at the table, but train the child to let them alone. Grown people should not be deprived of things because children are present. Children should not think they have to have everything adults do. One small child of my acquaintance feels that his share in a box of candy, is passing it to others.

Children have learned a valuable lesson in self-control when they have learned to eat what is put before them without crying because they cannot have what is served to others.

In close relation to the question of self-control comes that of cheerfulness, unselfishness, and courtesy towards other members of the family and playmates. Taking the family as a unit of society, how important it is that a child learn how to be fair to those with whom he comes in daily contact. Loyalty and devotion to the family is the cornerstone of loyalty and devotion to the nation. A parent's attitude towards servants of the household is very important. If a child can be made to realize the value of the work of the gardener or house servant in the sum total of all labor, how much easier does the training in courtesy and consideration become. If a child is required to clean up the litter made from cutting paper, for instance, or put away his playthings, how much more does he appreciate the work of those who do that as a routine. A child should be given responsibility early. Let him have some duty to perform regularly, such as filling the bird-bath or weeding the garden.

In regard to truth-telling, there is no better teacher than good example. How can a child value the truth when parents and nurses deceive him constantly and tell what may be called "white

lies " with no apologies! When children ask questions, how many of them get an honest attempt at the truth! The question of sex teaching suggests itself in this connection. Children believing in their parents ask questions regarding the fundamentals of life. Should their parents, cowardly or indifferently, shirk the great privilege of responding to this trust?

Boastfulness in children should be discouraged, as it obscures the truth, and through it children grow in the practice of deceiving their companions and themselves, enjoying the commendation received even when undeserved.

It is to be urged that those in authority over children have ideals, and after making a very early beginning persevere in the attempt to work them out, directing and correcting wisely, not as though the days had no relation to one another, and that a feeling of irritability were sufficient to dictate the kind of treatment to be meted out. Let the examples of the parents be worthy ones to follow, first of all, and then unite with the love and understanding which a study of the individual child has given, a dignified firmness in enforcing obedience. Since much of life is necessarily a subordination of one's will to higher authority, the consequent relationship of child and parent is only the first lesson.

Parents should realize that most normal, healthy



"IN THE COUNTRY THERE IS ALWAYS SOMETHING TO INTEREST
AND INSTRUCT THE CHILD"

children are active and energetic and need outlets for their energy. In the country where there are animals to feed and crops to be planted and gathered, there is always something to interest and instruct the child, but in the city places for play and things to play with should be provided. The poorer children are being taken care of in the public playgrounds under trained supervisors, but are the children of the well-to-do? Children should have the companionship of their mothers and fathers on walks and picnics in the woods, which are the parks of rich and poor alike. If more fathers realized the right of their children to this companionship, they would not so often be mere fountains of material blessings, but there would be a real sympathy making necessary discipline easier for all.

The first point to emphasize in the consideration of discipline is that the child should not be nagged all the time, but after a wish or command has been expressed it should be obeyed whenever and wherever made. A parent or person in authority must have absolute confidence in himself, confidence that the child will obey. The parent who feels helpless in the hands of his child and doubts himself might as well not attempt to discipline. A child should not be allowed the center of the stage nor to interrupt conversation any more than should a grown person. If children are allowed to show off

it develops in them not a love of accomplishment but of applause.

In the matter of punishment and rewards there is a great difference of opinion. I believe many little things should be ignored as passing phases, since too frequent punishment loses in effectiveness. After a child is old enough to be reasoned with, such punishments as sending him to his room, standing him in a corner, or depriving him of some plaything, or prospective pleasure, are often more effective than corporal punishment. Children should learn early not that good deeds are always rewarded materially, but that misbehavior means unhappiness either to themselves or some one else.

III

THE NURSE

To be successful in the handling of children the nurse must first of all love children and besides this must have special qualifications fitting her for one of the most important duties which fall to any individual.

She must be intelligent, and a keen observer. She must have an even temper and have endless patience. She must be firm and kind. She must be content with observing the results of her work without receiving much applause.

Every action of a child is worth observing, especially during sickness. Since an infant cannot talk, all information must be gotten from observation. Frequently much more information may be derived when the child is alone with the nurse, or the mother, or when it is asleep, than when the physician is making his visit.

The child in reality speaks a very definite language, the correct interpretation of which requires careful study. For example, the writer saw a beautiful child die, during the hot weather, as a

result of an improper interpretation of its language. The baby cried much after feeding and the nurse, taking the cry to mean "hunger," gave the infant food as often as it cried. For several weeks there had been frequent bowel movements which were at first normal in color, but gradually became green and watery. Had the nurse interpreted properly the child's language she would have known that the cry did not mean hunger but indigestion. She should have known this from the frequency and character of the movements and should have diminished the quantity of food and increased the intervals between feedings, or if there were any doubt as to the proper course to pursue, consulted the physician in charge.

Besides having natural qualifications, a nurse should have special training. There are now institutions in every city, directed to the special care of children, where such training may be secured. Courses for nursemaids in the care and feeding of children, extending over a period of six months, are now given in connection with many of the child welfare clinics.

IV

CARE OF THE NEW BORN

The nurse assumes the care of the infant as soon as the cord has been tied, and from that time on its welfare is largely in her hands.

Her first duty is to see that the baby is wrapped in warm blankets and placed out of "harm's way," in a well ventilated room, where the temperature is between 70 and 80° F. [*See Frontispiece.*] Great care should be exercised in the use of the hot-water bottle, as frequently serious or even fatal burns occur in this way.

Tying the Cord. The cord should be carefully watched for bleeding during the first twenty-four hours, and in case any hemorrhage occurs the physician should be notified at once. If he is not at hand, in case the bleeding is at all active, the cord should be retied with a good stout silk ligature which has first been boiled.

Care of the Cord. The subsequent care of the cord is of the utmost importance.

Whatever method is employed by the physician in charge, the ultimate object is to keep the cord

free from infection and at the same time to have it dry up, (mumify) so that it will separate from the body as soon as possible. The cord normally "falls off" in a week or ten days.

As a dressing for the cord some powder, such as bismuth subnitrate or starch which has been sterilized by baking, is to be recommended. This powder is dusted on sterilized gauze and the cord enveloped therein.

Care of the Navel. *If at any time the skin around the navel should become inflamed the physician should be informed at once, as an infection of the navel may be a matter of the utmost gravity.*

After the cord has been separated the raw surface may be sponged once daily with a normal salt solution (teaspoon salt to pint boiled water), or a 50% alcohol solution, after which it is to be covered with sterile gauze.

HERNIA (RUPTURE)

Rupture or nonclosure of the abdominal wall at the navel is a very common affection and may usually be prevented if the proper precautions are observed by the nurse.

Binders. Even before the cord has separated a "snug" (not tight) binder should be applied; this should be worn until the navel is healed. It should then be discarded.



THE CORRECT TREATMENT OF ABDOMINAL HERNIA

Influence of Crying. Prolonged crying, before the umbilical opening has healed, may result in rupture.

Application of Adhesive Straps. A strip of surgeon's plaster (oxide of zinc) two inches wide and six inches long applied across the abdomen over the navel, so as to hold the edges of the opening firmly together, frequently results in a "cure." The objection to this form of support is that great care must be exercised so that the plaster does not become wet, otherwise it will not adhere. Another objection to the plaster is that the skin after a short time becomes irritated so that for a time its use may have to be discontinued. These "adhesive straps" should be removed by sponging with benzine, and after the skin is clean and dry a new strip of plaster should be at once applied. To apply this strip properly an assistant is necessary. It must be worn for several months at least and long after any evidence of the hernial opening has ceased to exist.

The classical "button" as a cure for umbilical hernia is worse than nothing and should never be used.

Yarn Trusses: for Hernia in the Groin. In the treatment for hernia in the groin in infants and young children trusses of soft yarn are often sufficient if properly and persistently applied.

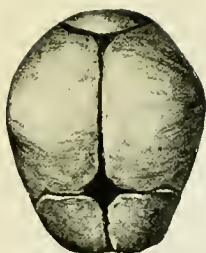
BATHING

No bath need be given for the first few hours after birth. The infant should, however, be anointed with warm oil in order to soften the cheesy material (Vernix Caseosa) with which the skin is usually covered, and the first warm sponge bath given after 12–24 hours.

Temperature of Bath. During the first month only sponge baths should be given, and these only in a room where the temperature is above 75° F. The baby should be covered with a warm blanket and only a portion of the body exposed at one time. The temperature of the water should be 95–100° F. for the first few weeks, after that slightly cooler. Tub baths may be given to rugged infants after the first month or two, provided the temperature of the room and water are properly maintained.

Exposure to Cold. It must be remembered that young infants do not stand exposure to cold at all well, they lose heat rapidly, with resulting lowered vitality and consequent bronchial and digestive disturbances. *Cold baths should never be given to young children. Such a practice has no precedent in nature, neither among aboriginal races nor animals. We will do well not to try to improve too much upon nature.*

Influence of Soap on Skin. If any soap is



THE SKULL OF AN INFANT
SHOWING SUTURES AND
FONTANELS

[Page 3.]



"AT ELEVEN TO TWELVE
MONTHS THE CHILD WILL
STAND BY TAKING HOLD
OF THINGS" [Page 23.]



FOLDING BATH-TUB

used it should be of the best quality, since many cheap soaps contain free alkali in such quantity as to be extremely irritating to the skin, not infrequently producing an eruption.

CARE OF THE SKIN

The skin of the new baby should be dried with a soft towel by sponging, not by rubbing, as the latter is a frequent source of irritation. After six months, in vigorous infants, the temperature of the water may be reduced to 80° F. or even less and some friction used so that the skin is made to glow. In older infants the face and neck should be sponged with cool water, since these parts are always more or less exposed to the atmosphere.

Skin Irritation. The skin soiled from the discharges from the bowel and bladder should be sponged off with warm water or oil every time the diaper is changed; otherwise it will become inflamed. When some degree of irritation is present an ointment, such as zinc oxide, should be smeared over the cleaned surface in order to protect the skin from further contact with the discharges.

Care of Skin Around the Genitals. Great care should be exercised in cleansing the skin around the genitals after a bowel movement, especially in female infants, since it is not improbable that many

cases of bladder infection result from contamination about the vulva. A pledget of cotton dipped in clean water should be used to cleanse the vulva, wiping from before backward. Each cleansing will therefore require several pledgets.

Wash Cloths. Wash cloths should never be used more than once without being washed and boiled. Soiled washcloths may readily be a source of infection to the eyes and genital organs.

CARE OF THE GENITAL ORGANS

The Female. The genital organs of the female infant should be cleansed daily by sponging with warm water to which some borax may be added. All secretions should be removed from the folds and the surface dried by careful sponging with some soft material. No powder such as talcum should be used directly in or around the vulva. Such powder acts as a foreign body and serves only to produce irritation. If some irritation of the mucous membrane is present, absolute cleanliness is the best remedy, and if any application is made it should be in the form of a simple emolient, such as zinc ointment or vaseline. Not infrequently a concentrated urine, due to improper food or insufficient water, is the cause of the irritation.

The Male. It is in the care of the genital organs of the male infant that the greatest diversity

of opinion exists. Practically all male infants have an adherent foreskin at birth.

Circumcision. The question is what should be done with this adherent foreskin? Should it be left alone, or shall stretching or circumcision be performed? The fact is that if left alone about one-third to one-half of the cases will correct themselves after a few months. The remaining cases should be corrected either by stretching, or, where the foreskin is very long, by circumcision. These questions must be left to the decision of a physician. Where there is a great amount of secretion around the glands, and where after one year it is found that it is difficult to keep the parts clean, then circumcision should be performed. I am convinced from long observation that altogether too much attention is directed to the genital organs in infants and young children. It is hard to conceive that nature should have made such a serious mistake as many people would have us believe.

It is usually sufficient to keep the genital organs of both sexes clean, and if any irritation or inflammation is found to be present, then the physician's attention should be called to the condition.

CARE OF THE EYES OF THE NEW BORN

Eye Infection Treatment. It is a well known fact that 80-90 per cent. of the cases of blindness

are traceable to infections received from the secretions of the mother at the time of birth. Any purulent vaginal discharge from which the mother may be suffering at the time of the birth of the child is very liable to infect the eyes of the infant. There is one form of infection (gonorrhea) which is especially liable to produce blindness. Since it is impossible without a microscopic examination to rule out this infection, all suspicious cases should be treated at once by dropping a solution of nitrate of silver into the eyes. This should always be done under the direction of a physician. In some States this treatment is compulsory in all cases, and many physicians make it a routine.

In my opinion, in all cases, the eyes of the new born should be washed with a solution of warm Boric Acid and a 15 per cent. solution of Argyrol dropped in. This treatment should be repeated at least three times daily for several days. If there is the least trace of pus present, or if the eyelids are stuck together in the morning, the condition should be at once reported to the physician. A culture should be taken and the exact character of the infection determined.

CARE OF THE MOUTH

Swabbing. *The mouth of the healthy infant rarely needs cleansing.* Directly after birth if there

is much mucus in the mouth or throat it should be wiped out. This, however, should be done with the greatest care; otherwise serious injury to the mucous membrane may result. The system generally practiced of forcibly swabbing out the mouth daily one or more times with the index finger, over which a piece of gauze has been stretched, is responsible for many of the sore mouths in infants.

Wherever the delicate epithelial covering of the mouth is brushed off, a white spot results. The secretions keep the mucous membrane of the mouth clean, and it is only when teeth appear that the mouth needs care, unless some infection has already occurred. The infected spots should be gently sponged with some mild alkaline and antiseptic solution, such as boroglyceride.

CLOTHING OF YOUNG INFANTS

Exposure to Heat and Cold. The question of clothing must of course differ with the character of the climate and with the kind, and degree of heat in the home. The important thing is that the body of the infant be so protected by clothing, that it will be at no time exposed to degrees of cold or heat to which it cannot accommodate itself. Young infants do not stand exposure to cold well, they lose heat rapidly and are liable to suffer from some acute catarrhal condition as a result. Neither do

they stand prolonged high temperature well. It is important therefore that the amount of clothing should vary with the temperature. The skin should be kept comfortable. During the winter in the northern climate, woollens should be worn, the amount to be determined by the temperature of the atmosphere.

In extremely hot weather in summer much, and sometimes practically all, clothing should be removed.

Prickly Heat. An extremely irritating rash, known as "prickly heat," frequently results from too much clothing in hot weather.

Care must be exercised, since, in this climate particularly, sudden changes of the weather are apt to occur, and with a descending thermometer, clothing should be gradually added.

Not infrequently the most serious intestinal disturbances occur in infants not during the hottest weather, but directly after a sudden drop in the thermometer.

LIST OF CLOTHING FOR NEW-BORN BABY

Three flannel binders (one-half yard of twenty-seven inch flannel).

Three shirts, wool and silk, or wool and cotton.

Two flannel petticoats.

Two flannel or knitted sacques.

Two pairs of worsted socks.

Two dozen diapers, twenty-two by forty-four inches.

One dozen diapers, twenty-five by fifty inches.

Four white muslin slips.

One cloak.

One warm cap.

One pair of mittens.

One veil.

Two blankets.

One box talcum powder.

Two dozen safety-pins, large and small.

Two bath towels.

Two soft towels.

Later—Three pairs of woolen stockings.

Three knitted bands with shoulder straps.

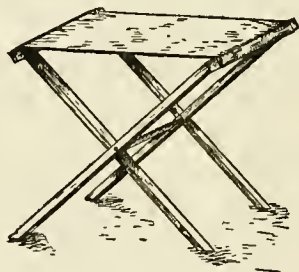
Additional diapers.

(Supplement No. 10 U. S. Public Health Reports.)

The flannel binder, four to six inches wide, should be worn snugly, not tightly, around the abdomen, until the navel is healed. This should be so applied as to approximate the edges of the umbilical opening. The woolen shirt in warm weather should be of the lightest weight.

When extra clothing is needed at night, or when the child is out of doors, it may be added in the form of coats, blankets, robes, etc.

The amount of clothing should only be sufficient to keep the skin comfortable. If the skin perspires, some clothing should be removed. If the baby perspires when asleep, it is either too warm or suffering from rickets or malnutrition.



HANDY FOLDING TABLE FOR BATHING AND DRESSING THE BABY

All clothing should be so arranged as not to interfere with the free movements of the body. In older children all clothing should be suspended as far as possible from the shoulders. (See page 179.)

Effects of Tight Clothing. Too tight clothing around the chest interferes with breathing. A tight band around the abdomen is a frequent cause of regurgitation of food, and in addition is a possible factor in the production of ruptures in the groin.

Freedom of Motion. The hands and feet should be allowed unrestricted movement, since it

is only in this way that the baby gets the exercise it needs for proper development.

DIAPERS

Diapers should be of soft non-irritating material which will readily absorb moisture (cotton). They should be loosely applied so that the infant has freedom of movements and is comfortable.

Soiled Diapers a Cause of Bladder Infection. Diapers should be changed as soon as soiled. Soiled diapers are always a source of discomfort and not infrequently the cause of severe irritations of the skin, as well as of infections of the genital and urinary tracts. This is especially true in the case of female infants.

No diaper should be applied a second time without first being washed.

All diapers which have been soiled by discharges from the bowel should be first washed and then boiled and thoroughly dried before being used.

Danger of Safety Pins. The use of pins is frequently a source of great discomfort to infants. It is not uncommon that in fastening diapers safety-pins include the skin also, and the writer has on two occasions seen the scrotum pierced. When children shriek as if with pain it is always well to explore the skin under the diaper.

“Vanta Garments,” including diapers, are now

procurable fastened with tape, no pins being necessary. They may be purchased at any general store.

THE NURSERY

The following requirements are essential for an ideal nursery :

Sunshine. First, the room should be of good size, with plenty of light, the windows being so located that it has sunshine a part of the day at least, the year around.

Fireplace. A fireplace is an excellent adjunct and serves not only to heat the room at special times, but also as a means of ventilation.

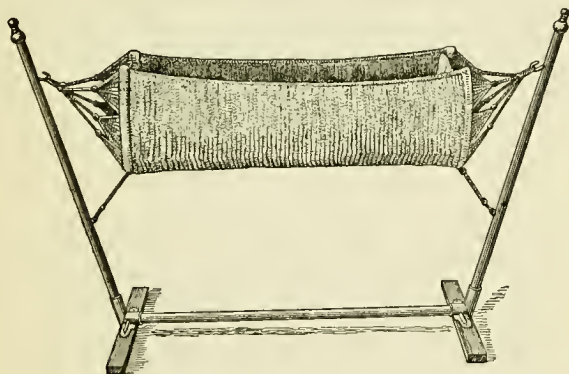
The windows should be furnished with dark shades and no other hangings should be allowed in the room, as they simply serve to collect dust.

Fresh Air. Open Windows. The air should be kept constantly fresh by means of some aperture communicating with the outside. It is sufficient if a window is left slightly open, preferably both at the top and bottom, for by this means there is a constant rotary motion of the air around the window which serves to keep the air fresh. A screen placed before the window will prevent the air from blowing directly across the room. It is not sufficient to have the windows of a nursery opened once or twice daily for a few minutes, as the air quickly becomes foul again.

Number of Persons at One Time in Room.

No more than one person should be in the nursery at one time with an infant, and during its sleeping hours it should be alone.

Temperature of Nursery. The temperature of the nursery for an infant during the first few months should be 70° F. during the day and during the night slightly lower. After six months it may



A KNITTED HAMMOCK FOR THE BABY

be allowed to go as low as 50° F. if the infant is rugged and has no catarrhal conditions of the respiratory tract.

Zero temperatures are to be avoided in young children. The less the extremes of heat or cold to which the mucous membranes of infants are exposed the less liable they are to suffer from catarrhal conditions of the respiratory tract.

Fresh Air and Cold Air. *It must be remembered that what is needed is fresh moist air and not cold air, and that it is not necessary that air be cold in order that it be fresh.*

Lighting of the Nursery. A nursery should never contain a gas jet; it is always liable to leak sufficiently to be a source of contamination to the air. A lamp or jet should never be permitted to burn for hours at a time in a nursery. Where electric lights are not available, a small wax candle will suffice and will use up a minimum of oxygen.

AIRING OUT OF DOORS

Where the conditions at home are at all ideal it is not necessary nor advisable that an infant be taken on the street for any airing. When a house has a number of windows through which the sun shines, or in addition a well situated porch, an infant can get just as much and as good air at home as it can anywhere.

The Perambulator. Kissing. Wheeling the baby about the street has nothing to commend it and has the disadvantage of exposing the infant to being picked up and kissed by every admiring friend the mother happens to meet, with the added danger of contracting some form of contagion by the way.

Shade. During the hot weather it is fre-



A CHILD SHOULD HAVE MUCH EXERCISE IN THE OPEN AIR,
BOTH SUMMER AND WINTER
[Pages 56 and 123.]

quently cooler on the shady side of the house with the windows open than it is out of doors. When the quarters are small and it is impossible to keep the room cool, the baby should be taken into the open air, on the shady side of some building, in an open shady grass plot under the trees, or in the public parks.

SLEEP

A new born baby should sleep practically all of the time except when it is nursing. From six months to a year an infant should sleep about two-thirds of the time. Up to the age of six years a child should sleep fully one-half of the time.

An infant should never sleep with the mother or nurse. It should be given its food and put in its own bed, and preferably in its own room.

After six months a baby may go all night, from 6 P.M. to 6 A.M., without a feeding. It is, however, rather unusual that a baby will go so long without food. It is therefore usually better to give a feeding at ten o'clock. If a baby wakes up again in the night it should never be taken up unless to change its diaper, but should be given a little water (no food) and never carried about. The habit of taking up a crying baby at night, except for reasons given above, is fatal to the comfort of the household and bad for the baby itself.

After two years many children sleep too much.

A child who sleeps all night, from 6 P.M. to 6 A.M., and takes a nap of one or two hours during the day, should spend the rest of the time out of doors, in reasonable weather.

Effects of Exercise. In order that a child shall develop properly physically and mentally it must have much exercise in the open air.

A child who has insufficient exercise will not sleep quietly; it takes its food without relish and does not assimilate well what it does take.

The habit of taking a nap in the middle of the day should be insisted upon until the fifth or sixth year and as much longer as possible.

Restlessness During Sleep. Restlessness during sleep is due to a number of causes: underfeeding, overfeeding, adenoids, soiled diapers, illness (fever), rickets, too much clothing, or to the child's having been spoiled by being carried about or rocked.

TEMPERATURE

The normal temperature of the baby is $98\frac{2}{5}^{\circ}$ F. A slight variation of $\frac{1}{2}^{\circ}$ either above or below does not mean anything. An infant's temperature should always be taken by rectum, as a temperature taken in the groin, or under the arm, is liable to be incorrect. It happens not infrequently, if the skin is moist, that even with a high fever the thermometer will not register.



NURSERY PEN

[*Pages 52 and 122.*]



"IN AN OPEN SHADY GRASS PLOT UNDER THE TREES"
[*Page 55.*]

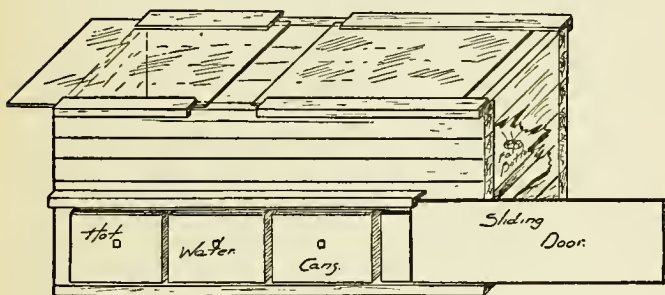
Slight variations of temperature in children which are not persistent may be disregarded.

A persistent temperature, however, of 101° or 102° F. always means some systemic disturbance, never teeth.

When a temperature persists after the simple remedies have been tried (cathartic and water diet) a physician should be consulted.

PREMATURE INFANTS

Infants born between the seventh and ninth months of intra uterine life are termed premature. The chance which these infants have for life and proper development depends upon many conditions.



SIMPLE INCUBATOR FOR PREMATURE INFANTS

A premature infant born of syphilitic parents has little chance for life.

A premature infant born of healthy parents, when the weight of the infant at birth exceeds four

pounds, has a fairly good chance for life and normal development, provided it can be placed in an incubator and have breast milk.

Premature infants who cannot have breast milk have a relatively small chance; they sometimes develop for a few months, but are prone to be carried off by some infection.

To maintain the body heat in premature infants they should be placed in an incubator or properly prepared basket and the temperature kept uniformly between 90° to 95° F. Fresh air must be con-

stantly admitted from below. The infant is wrapped in cotton wool, not dressed, and only taken from the incubator to be fed and cleansed. Bathing except for simple cleanliness should be dispensed with. The baby should be rubbed daily with warm olive oil.

Many premature infants have insufficient strength to take the breast. The milk should be removed regularly by expression, or by means of a breast pump, and given the infant with a medicine dropper or Breck feeder. It is necessary often to dilute the milk at first with boiled water.



BRECK
FEEDER

When the mother has insufficient milk a wet nurse should be employed. Allowing the wet nurse's baby to nurse the mother regularly for a while, will frequently result in a proper flow of milk,

after which the services of the wet nurse may be dispensed with.

The number of feedings and the amount at a feeding which a premature infant may have will depend upon the individual case. Weak seven-month babies will usually take very little at a feeding ($\frac{1}{2}$ to 1 ounce). It may therefore be necessary to feed them rather often, say every two hours for eight to ten feedings in twenty-four hours. If the baby takes a good amount at a feeding it may be fed less often, every three hours, with six to seven feedings in the twenty-four hours. If the stools are curdy, or green, or if there is vomiting, the quantity should be diminished or the milk diluted. The diet of the nurse should be carefully supervised. (See chapter on the Wet Nurse.)

As the baby approaches full term the surrounding temperature may be gradually reduced, so that it may be removed from the incubator and placed in a basket, or box, which is properly padded and where the body temperature can be easily kept up.

Where the regular hospital incubator is not accessible one may be readily improvised by a good mechanic at little expense. The temperature can be maintained fairly uniform by means of a hot-water coil, or by several hot-water cans which are changed at regular intervals. A thermometer should always be kept near the baby.

V

BREAST FEEDING

There is but one ideal food for infants, and that is mother's milk.

Reasons for Nursing. The death rate among infants who receive breast milk is only one-sixth of that of infants fed on the bottle.

Ninety per cent. of mothers can nurse their babies in whole, or in part, for the first few months, and many can nurse them wholly, or in part, for the first year.

About the only disease which should prohibit the mother from nursing her infant is tuberculosis, in which case the continued nursing would be dangerous to both mother and child.

When for some legitimate reason a mother cannot nurse her own baby a wet nurse whenever possible should be procured. (Page 70.)

Some of the common reasons given for not nursing a baby are: "There was not enough milk"; "the milk was bad," etc. These are not sufficient reasons. The baby should be kept at the breast, even if only a small amount of milk is secreted, and



BREAST FEEDING — THE PROPER POSITION FOR NURSING THE
BABY

the deficiency made up with some other food. Generally speaking, there is no such thing as "bad" breast milk.

Loss in Weight During the First Weeks. It is a common occurrence, especially with first babies, that for the first few weeks there is insufficient milk in the breasts. If, however, nursing is persisted in regularly, the quantity will almost always increase.

Secretion of Milk. In cases where during the first week or so there is insufficient milk secreted, the baby will lose in weight. This, however, is not serious and the weight will usually be rapidly regained when the secretion of milk is well established. It is during this time that great care must be taken not to produce serious digestive disturbances by over feeding with some artificial food. It is usually sufficient for the first few days to give in addition to the breast, some boiled water, and later, if the breast milk is insufficient, to begin with a little cow's milk (not cream) diluted in the proportion of one part of cow's milk to three parts of boiled water.

Advantages. The advantages of breast feeding are:

First: The low death rate.

Second: The better nutrition of the infant.

Third: The greater immunity to disease.

Fourth: The greater chance of recovery from disease.

Fifth: The greater sympathy which exists between mother and child.

Sixth: The greater economy of time and money in nursing an infant compared to feeding it artificially.

Cost of Patent Foods. The average daily cost of many of the patent foods is in excess of twenty-five cents.

To successfully nurse her baby the prospective mother should consult a physician many months before the birth of the infant with the idea of maintaining herself in the best possible physical and mental condition. The urine should be examined at least once monthly during the pregnancy. In case of undeveloped nipples much can be done by proper manipulation to develop them.

Colostrum or First Milk. During the first twenty-four hours after birth the infant should be put to the breast only every six to eight hours, and in the interval given a little water with a spoon. During the second twenty-four hours the baby may be put to the breast every five to six hours. If there is much milk in the breasts, which is not the rule, great care must be taken or the infant will get too much and as a result have an acute indigestion with vomiting and green watery stools, since

the first milk (colostrum) is laxative in character.

Technique of Nursing. After the third or fourth day the infant should be put to the breast regularly every three to four hours, but not to exceed six times in twenty-four hours.

It is important during the first week rather to underfeed an infant than to overfeed it.

If it is found that the stools are good in character and the baby seems hungry, then the amount of milk allowed may gradually be increased.

Number of Feedings. Where there is an abundant secretion of milk the intervals may be four hours with five feedings in the twenty-four hours. The important thing is that the baby get sufficient food for its needs and that it be given at long enough intervals, so that the stomach will have a period of rest before the next meal.

Too frequent nursing is the most common cause of colic, vomiting and bad stools in breast-fed infants, and frequently results in the baby being weaned.

When the breasts are small, as they often are in the case of first babies, and insufficient milk is secreted, both breasts may be given at each nursing. In the case of premature or very weak infants, where the capacity for food is very small, the number of nursings may be increased to seven or eight in the twenty-four hours.

Quantity of Milk at a Feeding. The quantity of milk taken at a nursing is extremely variable. It is not infrequent that at the age of two or three weeks the infant will get three to four ounces at the early morning nursings, while at the afternoon and evening meals it will not exceed one to one and a half ounces.

Variation in Quantity and Quality of Breast Milk. Mental Condition of the Mother. There is a considerable variation both in the quantity and quality of the milk from day to day, depending upon the physical and mental condition of the mother, character of food, and quantity of fluid taken. It is important, therefore, that the mother should lead as even an existence as possible during the nursing period. *She should have plenty of plain food at long intervals, plenty of water between meals, and uninterrupted sleep at night.*

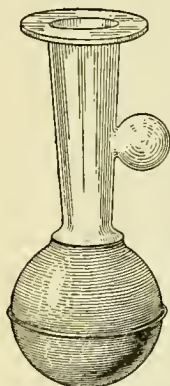
In order to carry out these demands regular hours for nursings, with long periods between, especially at night, are absolutely essential.

THE DAILY QUANTITY OF MILK NEEDED BY THE AVERAGE BREAST INFANT DURING THE FIRST YEAR IS AS FOLLOWS (CAMERER):

End of first week	291 grams, 9½ ounces
End of first month	652 grams, 20 ounces
End of second month	804 grams, 25 ounces
End of third month	852 grams, 27 ounces
End of sixth month	1000 grams, 32 ounces

End of eighth month	1000 grams, 32	ounces
Twelfth month	1000 grams, 32	ounces

Green Stools. When a baby is gaining in weight and has large, curdy stools which are often tinged with green, it is usually getting too much



BREAST PUMP

milk, or sometimes, owing to the character of the diet of the mother, the milk is too rich in fat. In such cases the intervals between feedings should be lengthened to four hours, especially if there is vomiting, or the quantity of milk allowed the infant at each feeding should be reduced. If it is found by weighing before and after nursings that the baby does not get too much milk, then the diet of the mother

should be reduced and she should be enjoined to drink large amounts of water between meals and take regular exercise in the open air.

When for some reason the mother must temporarily stop nursing, milk should either be pumped or expressed from the breasts at regular intervals.

Overfeeding and Underfeeding. *Not infrequently infants who are overfed stop gaining in weight after a time and do not gain again until the amount of food has been properly reduced.*

If a baby does not gain in weight, does not vomit,

has normal but small stools, it is presumably not getting enough to eat. The stools in case of hunger, however, are frequently green in color, but rarely curdy.

Hours for Nursing. The hours for nursing should be definite and the infant wakened if asleep. In a short time, if regular hours for feeding are adopted, the baby wakes at the proper time.

Regular hours are better than the haphazard way, for several reasons:

First, the intervals between feedings will be long enough for the stomach to empty itself and have a period of rest before the next feeding.

Second, the mother can arrange her household duties and have some freedom and recreation without feeling that she may be neglecting the baby. It is important for both mother and infant that the mother should have some time each day to spend in the open air and for social intercourse.

When the hours for nursings are irregular the mother never knows when she can leave the house or when she must be at home, and the result is that many babies are weaned who would otherwise be kept on the breast.

Night Nursings. After the sixth month a baby who gets a proper amount of food during the day may go from 10 P.M. until 6 A.M. without anything but perhaps a drink of water.

Diet of Mother. *The diet of the nursing mother should consist of good, plain, properly cooked, nutritious food.*

Much of the talk about many articles of food, such as fruits, making the baby colicky, is rubbish. Pickles and highly seasoned foods, including candy and pastry, in any amount, should be excluded from the diet. The habit of eating many meals daily is a mistake. It is much better to eat three good meals daily and between to drink plenty of water. It frequently happens that where the mother "stuffs" herself between meals the digestion becomes deranged and the quantity and quality of the milk is seriously affected.

Overfeeding of Mother. Many times where a mother takes great quantities of milk and gruels between meals she gives a small amount of milk, usually too rich in quality, and gains rapidly in weight herself.

Before early weaning a baby always consult a physician, as in ninety per cent. of the cases a solution of the difficulty can be found and by some modification of the diet the baby may be kept on the breast.

Menstruation. In case the mother begins to menstruate during the nursing period the milk usually is reduced in quantity and quality for a few days, so that some extra food may have to be given

the infant until the mother again has sufficient milk. This alone does not justify weaning the baby.

Pregnancy. On the other hand, in case the mother becomes pregnant during the nursing period, the baby should be gradually weaned. First, because the milk will rapidly deteriorate in quantity and quality, and, second, because the drain upon the mother is too great.

Reasons for Infants Refusing to Nurse. When an infant refuses the breast but takes an artificial nipple, it is usually because it is easier to grasp, there is insufficient milk in the breast, or because the food from the bottle is sweeter.

If a baby takes the breast for a fraction of a minute and then lets it go and cries, and repeats this several times in succession, the usual reason is some obstruction, preventing nasal breathing, and consequent inability to nurse. The same symptoms will occur if a bottle is given in these cases.

Weighing Before and After Nursings. Not infrequently when a baby refuses the breast it will be found that there is little milk there. The exact amount obtained at a feeding should be determined by accurate weighing before and after nursing.

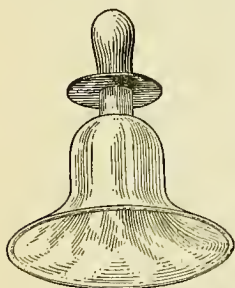
FISSURED NIPPLES

Nipple Shield. When the nipples are sensitive it is frequently the result of fissures. Under

these conditions a nipple shield should be used until they are healed and the nipples sponged frequently with a fifty per cent. solution of alcohol. In all cases after nursings the nipples should be sponged with an alcohol or boric acid solution in order to prevent infections of the breast.

ADDITIONAL FOOD (MIXED FEEDING)

At the age of seven to eight months a breast baby should begin to have some additional food. At



NIPPLE SHIELD

first this may be a little soup or beef juice to which some toast or well cooked cereal has been added. When nine to twelve months of age the baby may have in addition to the soup two or three pieces of toast or zweibach daily. These pieces are about two inches wide and about three

inches in length. Other food, such as rice, well-cooked oatmeal, or a little baked potato, may also be given. No food should be given between meals, but just before a feeding.

It will be found that babies who are fed exclusively on breast milk during the entire first year are usually pale and the muscles flabby, while those given a little extra food will be plump and rosy.

Infants fed exclusively on the breast during the first year are difficult to wean and frequently lose much in weight before they can be prevailed upon to take a proper amount of other food.

WEANING

At one year a baby should be fully weaned and if the milk is scant and it is receiving only a few ounces in the twenty-four hours, artificial feeding may be started to advantage earlier.

Weaning is often more readily accomplished by a competent nurse than by the mother.

The best plan is to wean the baby gradually. At seven or eight months an occasional bottle of properly modified milk may be given, then two may be substituted for two of the nursings. After a time a bottle may be substituted for the breast at every other feeding. By this means no inconvenience may be felt by either mother or child and the increase in weight may continue without interruption.

After one year the number of feedings should be cut down to four in the twenty-four hours and a mixed diet given. (See Diet for Infants Twelve to Eighteen Months, page 115.)

THE WET NURSE

The best wet nurse is one who has a healthy, thriving baby of her own. She should continue to

nurse her own baby, and if she has not enough at first for both it is usually possible to supplement the breast milk with some other food.

One must be sure that the wet nurse is not suffering from any communicable disease, such as tuberculosis or syphilis. She and her baby should be carefully examined by a physician, and if there is any possibility of syphilis a blood test (Wassermann reaction) should be made.

The diet and exercise of the wet nurse should be carefully regulated. Not infrequently an overindulgence in rich food is responsible for failures in wet nursing. A maximum of plain, nutritious food should be allowed at meal times, with plenty of water between. The habit of eating and drinking milk, etc., between meals usually results in a disordered digestion, with an over rich milk supply. The nurse should have several hours' exercise in the open air daily and should have enough duties to perform to keep her occupied and happy.

VI

ARTIFICIAL FEEDING

The first thing to be remembered before putting a young infant upon an artificial food is that there is no real substitute for mother's milk. Even when a food is compounded of the same ingredients, in the same amounts as nearly as can be determined, still there is a wide difference in its effects and in the manner of its behavior in the digestive tract.

Under certain circumstances infants must be fed artificially; therefore it is a matter of the most vital importance that a food be procured which will as far as possible meet the needs of the individual.

In many instances serious conditions which affect the digestion and nutrition are produced at the very onset by giving a food which is not adapted to the infant's needs.

Indigestion. Frequently an acute indigestion is produced from which it requires months to recover.

The best available substitute for mother's milk is clean, fresh, properly diluted cow's milk.

Any food which has not milk as a base is a dangerous food for any length of time.

Patent Foods. Some of the patent foods which claim to have milk as a base are also dangerous for continuous use when diluted as directed, owing to the large percentage of sugar and the small percentage of proteid and fat they contain.

Difficulty in Getting Clean Cow's Milk. In preparing an artificial food the first step is to procure fresh, clean, cow's milk from healthy cows. This may be difficult even in the country and in small towns where the cows are untested for tuberculosis, the stables unsanitary and filthy, and the milk improperly cooled and cared for. In the large cities it is a hard, and many times an impossible, task to secure clean milk. When the source of the milk supply is distant the chances of contamination are legion.

Since it is almost impossible for the average family in a city to procure ideal milk, it is important that great care be taken to get the best available.

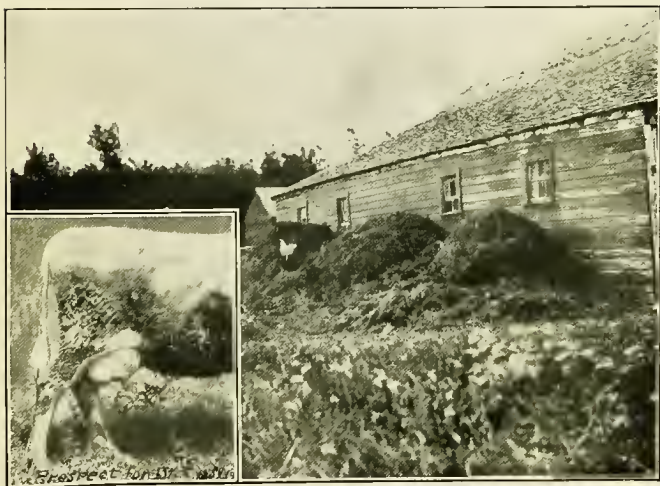
Tuberculin Tested Cows. Whenever possible, people living in a city should own their own cows, which have been tested for tuberculosis. The stable and the cows should be kept clean. Before each milking the cows' udders should be washed with warm water, as well as the hands of the milker. There is no comparison between milk from a cow kept under such sanitary conditions and that procured from the average milk-wagon. The wa-

ter-supply is a matter of the greatest importance. Wells are frequently infected by drainage from the stables and outhouses, and the milk is frequently contaminated in this way. Other things being equal, the milk from a herd is more uniform and therefore better than that from a single cow. The great masses, however, are forced to procure milk from a dealer.

Certified Milk. Certified milk¹ should be procured for infants whenever possible. The cost of this milk is somewhat more than the ordinary variety, but it is not usually prohibitive and the average daily cost is much less than for any of the patent foods. When certified milk cannot be procured, the best milk possible, from a known source, should be purchased. The milk should be less than twelve hours old and should be kept on ice from the time of milking until it is used.

Pasteurization and Sterilization of Milk. *Since the sources of contamination of milk are many and the difficulty of determining the character of the milk so great, it is expedient that all milk (with perhaps the exception of certified milk) should be properly pasteurized, or boiled. We would not think of eating raw meat, and yet it is not nearly so fertile a source of contagion as milk.*

¹ Milk certified by the Department of Health as having a bacterial count of not over 10,000 per c. cm.



A MODERN SANITARY COW STABLE CONTRASTED WITH THE OLD
STYLE DISEASE-BREEDING CONDITIONS

Contagious Diseases Carried by Milk. *We now know that many of the epidemics of infectious disease, such as scarlet fever, diphtheria, tonsilitis, and typhoid fever, are frequently directly traceable to the milk supply.*

The pasteurization of milk changes its character very little, and boiling for a short time (two minutes) does not change it sufficiently to outweigh its advantages on the side of safety.¹

Richness of Milk. For infants the milk richest in fat should not be sought, but rather milk only moderately rich. Milk from a herd is usually to be preferred to milk from one cow.

Breed of Cows. Holstein as a breed produce milk particularly adapted to infants. The fat percentage is rather low and the fat globules small.

THE CARE OF MILK IN THE HOME

After having secured the best milk possible it is necessary that it be kept pure and cold.

All milk for infants should be poured at once after milking into clean bottles which have been sterilized by live steam or boiled, and placed upon ice until delivered.

Temperature for Pasteurization. As soon as the milk is received at the home it should be pre-

¹ The City of New York now requires that all milk sold within the corporation, with the exception of A grade, be either pasteurized or boiled.

pared according to the formula prescribed. It should then be poured into nursing bottles, one for each feeding during the twenty-four hours, and each stopped with a plug of sterilized cotton wool. These bottles should first be thoroughly cleaned and boiled. The whole feeding may then be pasteurized by placing the bottles in a water bath until the temperature of the milk reaches 170° F. and then allowed to stand at this temperature for twenty minutes, or the milk may be first brought to the boiling point for a couple of minutes and then poured into the bottles. The bottles should then be placed on the ice until needed. Just before using a bottle it should be placed in warm water until the milk reaches the proper temperature (blood heat).

Milk left in a bottle after a feeding should never be used for a second feeding, but should be discarded and the bottle filled with water until it is cleaned and boiled.

Improper Pasteurization. The safest and simplest method for the average family to pursue is to boil the milk. Pasteurization under any circumstances does not kill all germs, and if improperly done it is worse than no pasteurization at all. Heating milk to an insufficient temperature merely stimulates the growth of organisms.

Where ice cannot be procured, milk which has been boiled and rapidly cooled, if kept in a cool

place, sealed from the dust and flies, will be comparatively safe for twenty-four hours.

Ice Box. A simple ice box can be constructed at a cost of fifty cents which will keep a baby's milk cold at an expense of two or three cents per day. (See directions on pages 97-98.)

It must be remembered that pasteurization, or boiling, will not transform filthy milk into clean milk. It will, however, remove the chances of such epidemics as some of our cities have suffered from during the past years.

Nipples. Nipples should be thoroughly cleansed and kept free from moisture in a covered glass jar until needed.

The habit which many mothers have of putting the nipple into their own mouths before giving it to the baby should be absolutely prohibited, as this is a frequent source of infection.

Thermos Bottles. Thermos bottles may be used to keep milk cold, but never to keep milk warm, since germs develop rapidly in warm milk.

The milk may be heated rather rapidly by putting the bottle under the hot-water faucet. Great care must be taken in the use of alcohol lamps, as frequent accidents happen in this way, and especially at night.

COMPOSITION OF COW'S MILK AS COMPARED WITH
MOTHER'S MILK

<i>Mother's Milk:</i>		<i>Cow's Milk:</i>	
	<i>Per cent.</i>		<i>Per cent.</i>
Fat	4	Fat	3-4
Sugar	7	Sugar	4½
Proteid	1½-1¾	Proteid	3-3½
Mineral Salts ..	⅕ of 1	Mineral Salts ...	¾ of 1
Water, about ...	88	Water, about ..	88

It will be noticed by a comparison of the two kinds of milk that the chief apparent difference is in the amounts of sugar, proteid and salts.

Mother's milk contains about 3 per cent. more sugar than cow's milk, and cow's milk contains about twice as much proteid as mother's milk. Cow's milk also contains two to three times as much mineral salts as mother's milk.

A study of these percentages has suggested to many in the past the possibility of substituting for mother's milk a chemically identical modification of cow's milk. This theory, however, was found to be false, as no amount of modification of the milk of one species can transform it into that of another.

Percentage Feeding. It was, however, found necessary to modify cow's milk for young infants and the method generally known as Percentage Feeding was adopted. This is the system generally described in the books on children.

Food Elements. This method is somewhat difficult for the average mother and approximately the same results can be obtained by simple dilutions of milk. This method will be described here.

Caloric Values. The different elements of the food: fat, sugar, and proteid, have definite food values. The food value is measured in units called *calories*, a calorie being the amount of heat required to raise one litre (approximately a quart) of water one degree centigrade.

The food or caloric value of proteid and sugar are the same, 120 per ounce, while that of fat is more than twice as much as either of the other elements. (For caloric values of different foods, see chart on page 185.)

WHOLE MILK AND CREAM

By whole milk is meant the milk as it comes from the cow, without any modification. By cream is meant the part of the milk which rises to the top of the bottle after standing. It is usually known as gravity cream and has a fat content of about 16% in contrast to centrifuge cream, which has a fat content of about 32%.

MODIFICATION OF COW'S MILK FOR INFANTS

Cow's milk is usually modified by diluting it with some fluid, such as water or gruel, and then adding

sufficient of whatever elements are necessary to bring them up to the proper percentages. (For Sugar and Gruel, see pages 89-90.)

Since the caloric value of cow's milk is practically the same ounce for ounce as mother's milk, it is apparent that if we dilute cow's milk we must either



CHAPIN CREAM DIPPER



CREAM DIPPER IN USE

give a greater quantity or add something to bring up its food value.

The usual procedure, therefore, is to dilute cow's milk and then add such a percentage of sugar and cream as the individual case will tolerate.

Since individual infants differ so widely in their tolerance of fat and sugar, it is always advisable to begin with low percentages of these elements and gradually increase to the proper amount.

Tolerance of Fat. Young babies will not usually digest as much cream in cow's milk as is normally found in mother's milk. For the average normal infant the following rules for feeding may be observed. It will be found, however, that there are many exceptions in which the milk will need further modification. These changes will be found to be more often necessary with the fat than with the proteid. If the milk is not first boiled, or some alkali, such as lime-water or potassium citrate, added, large cheesy curds of cow's milk frequently give trouble in passing the small end of the stomach. (Pylorus.)

It is always well in beginning with cow's milk to give much less in quantity than the infant needs and increase as rapidly as the tolerance will permit. *By adhering to this rule many serious digestive disturbances will be avoided and in the long run greater progress will result than if the infant is put upon a full amount of food from the start.*

The rapid gain in weight for which so many young mothers strive is often obtained at a great sacrifice.

Great increase in weight is of much less importance than normal digestion, which if maintained will mean a steady gain in weight and nutrition and a happy, contented infant.

QUANTITY OF FOOD AT A MEAL

It is a safe rule to give at a feeding a quantity in ounces corresponding to the age of the baby in months, plus one. For example, at three months, four ounces; five months, six ounces, etc., up to eight months, when the quantity at a feeding should not be increased.

When only five feedings are given in twenty-four hours, and when the milk is well diluted, this quantity will have to be exceeded in order that the infant shall get the proper amount of food. If, however, too large a quantity is given, the stomach walls will become permanently stretched and thereby lose the power of contraction.

MILK FORMULÆ

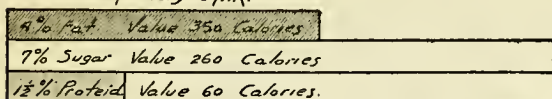
In normal infants the following formula will usually be tolerated: For the first few days — One-fourth whole milk, i.e., whole milk five ounces, three-fourths, boiled water — boiled water fifteen ounces.


Give two ounces every three or four hours for six feedings.

After a few days if the stools are good and there is no vomiting, some sugar (cane, milk or malt) may be added. This should be done gradually, adding at first one teaspoon and increasing up to one

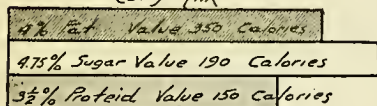
ounce or eight level teaspoons in a twenty-ounce mixture.


Mother's Milk.



Fat 

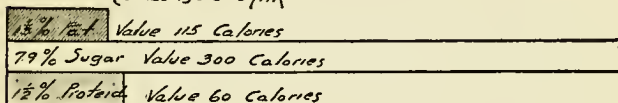
Cow's Milk



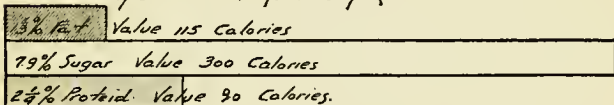
Sugar 

Protein 

Condensed Milk



A Standard Malted Milk.



The charts show the relative percentages and caloric values of one quart of mother's milk and cow's milk and of one quart mixtures of condensed milk and malted milk containing essentially the same amount of solid matter.

If the stools become thin or green the sugar should be reduced or excluded.

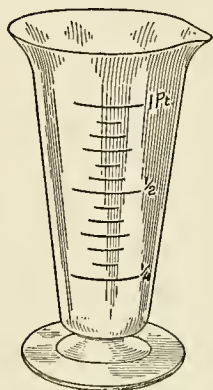
By the end of the first week the milk may usually

be increased up to one-third, with two-thirds boiled water, thus:

Whole milk, seven ounces.

Boiled water, fourteen ounces.

Sugar, one-half of one ounce.¹



PINT GRADUATE

Give two and one-half or three ounces every three hours for six feedings; for example, at six, nine, and twelve A.M., and three, six, and twelve P.M.

The milk and sugar should be increased on alternate days, the milk increased one-half to one ounce at a time, and the sugar one-half to one teaspoon at a time.

After two or three weeks the milk may gradually be increased up to one-half milk and one-half water, plus one ounce sugar; that is, about three rounded table-spoons.

Whole milk, twelve ounces.

Boiled water, twelve ounces.

Sugar, one ounce.

¹ *By weight*

1 ounce Cane Sugar	<i>By measure</i> 1- $\frac{1}{2}$ ounces
1 ounce Malt Sugar (Dextro Maltose).....	1- $\frac{3}{4}$ ounces
1 ounce Brown Flour	2- $\frac{1}{4}$ ounces
1 ounce Barley Flour	2- $\frac{1}{4}$ ounces
1 ounce Oatmeal	3- $\frac{3}{4}$ ounces

Give three or four ounces every three or four hours for six feedings.

This formula may be given up to six or eight weeks, after which the amount of milk may be gradually increased.

If the digestion is normal and the baby does not gain from four to six ounces weekly, the food may be increased in strength so that at three months it is taking five ounces at a feeding of a one-half milk and one-half water or cereal mixture with sugar, thus:

Whole milk, fifteen ounces.

Water, barley, or oatmeal gruel, fifteen ounces.

Sugar, one — two ounces.

Give five ounces every three or four hours for six feedings.

Between three and six months the milk may gradually be increased to two-thirds, with one-third water or gruel and one to two ounces of sugar.

(If there is a tendency to vomiting the period between feedings should always be four hours.)

Whole milk	17-24 ounces
Water or gruel	18-11 ounces
Sugar	1- 2 ounces

Give six or seven ounces at three or four hour intervals for six or five feedings.

From six to nine months the proportion may re-

main at two-thirds milk and the quantity increased up to eight ounces, thus :

Whole milk	24-32 ounces
Gruel	16- 8 ounces
Sugar	1 ounce

Eight ounces for five feedings.

At the seventh or eighth month some extra food, such as a piece of zweibach (toast) soaked up with beef juice, or soup, may be given at the feedings two or three times daily. No food should be given between feedings, except perhaps a little orange, prune or other fruit juice, well diluted with water.

No infant should ever have more than a quart (thirty-two ounces) of milk during the twenty-four hours, and when more food is needed, other things than milk should be given.

From nine months on, the proportion of milk may be gradually increased so that at one year whole milk may be given.

After nine months it is often well to give only four milk feedings and one in which there is little or no milk but an equal quantity of good soup in which has been cooked some rice and a little vegetable, all put through a fine sieve. The soup should have the consistency of gruel.

It will be found that infants who receive some food in addition to the milk after the seventh or

eighth month will be much better nourished at the end of the first year than those fed exclusively on milk.

FEEDING SCHEDULE FOR FIRST YEAR

			<i>Twenty-four hour quantity</i>				
<i>Age</i>	<i>Ounces at a Feeding</i>	<i>Number of Feedings</i>	<i>Milk Ounces</i>	<i>Water Ounces</i>	<i>Gruel Ounces</i>	<i>Sugar Drams</i>	<i>Total Ounces</i>
1st week	1-2	7-6	6-7	14		1-4	21
2-3rd "	2-3	7-6	8-10	13-11		3-6	21
3-6th "	3-4	6	10-12	14-12		6-8	24
6-8th "	4-5	6-5	12-15	18-15		6-12	30
2-3rd mo.	5-6	6-5	15-18		15-12	6-12	30
3-5th "	6-7	6-5	18-24		18-12	6-12	36
5-7th "	7-8	5	24-30		16-10	6-12	40
7-9th "	8	5	30-32		10-8	4	40
9-12th "	8	5	32		8	0	40

It must not be assumed that the above formulæ will be satisfactory in every case. Radical modifications may be necessary. In vigorous infants the amount of milk during the first few months may have to exceed that given in the foregoing formulæ.

Pale, Dry Stools. When the stools are very pale and dry, or where they contain small, white curds, some of the cream should be removed from the milk and more starch or sugar added.

Large Curds. Sometimes when unboiled milk

is used, large, hard curds, the size of a pea or a bean, appear in the stools. Under these circumstances the milk should be diluted and boiled for a minute or two.

Hard, pale stools are usually the result of too much fat in the food. Under these conditions the urine often has a strong ammoniacal odor. In these cases practically all of the cream should be removed from the milk and in its place sugar (better malt sugar) and some starch, such as barley, oatmeal or white flour, added.

Buttermilk with the addition of some sugar and starch is often an ideal diet in these cases. (See pages 93-94.)

After a period of from two to three months on a low fat diet a certain degree of tolerance to fat is again established. Cream must be added, however, very slowly, and never in any large amount. When cream cannot be tolerated some cod-liver oil or olive oil may frequently be given to advantage.

Loose Acid Stools. In cases where the stools are too loose and the skin around the rectum is irritated by the discharges, the sugar is usually in excess and should be cut down or removed entirely. If the movements are still loose, the gruel should also be removed and boiled water substituted as a

diluent. Sometimes a brown flour gruel will be tolerated when ordinary starch or sugar will not. The sugar and starch may usually be added later in small quantities.

HOW TO TELL WHEN THE FOOD IS AGREEING

If the baby is happy, not vomiting, and its stools are normal in character, and if in addition its color is good and it is gaining moderately in weight, there is probably nothing seriously wrong with the food.

It is a good rule not to change the food as long as the baby is well and gaining a sufficient amount weekly in weight, that is, four to six ounces.

SUGAR

Cane sugar may usually be used instead of malt or milk sugar. Its food value is about the same and it has among other things the advantage of being much cheaper.

Malt sugar, obtained usually in combination with dextrin, has the advantage over the other forms of being more laxative. It is, however, expensive, as is milk sugar, costing from thirty to fifty cents per pound. It is this form of sugar which constitutes a large element of many of the patent foods, and it is to the malt sugar that the laxative property of these foods is due.

USE OF GRUELS IN THE DILUTION OF MILK

Gruels are made usually from some of the grains, such as wheat, barley, oats, rice, etc. These flours consist largely of starch.

During the first few weeks of life it is better not to use gruels to any great extent, and if they are used at all they should be very thin and thoroughly cooked (several hours).

It is usually not well to exceed one-half to one ounce (two to three tablespoons) of wheat, barley, oatmeal, arrowroot, or rice flour, to the quart of water. As the water boils away more should be added, keeping the quantity up to a quart. (Page 186.)

The food value of starch is the same as that of sugar; in fact, in the process of digestion starch is changed to sugar and is assimilated as such.

The food value of the different starch gruels, ounce for ounce, is practically the same. There is, however, some slight difference in the way they act in the digestive tract.

Oatmeal has a slightly higher food value and is perhaps more laxative than the others.

Rice, on the other hand, is the most constipating.

Where laxative properties are sought it will be found that a gruel made from whole-wheat flour (containing the bran) will be particularly efficacious,

It will be necessary to strain the gruel through a fine sieve in order to remove the large particles of bran.

SUBSTITUTES FOR FRESH MILK

There are times and places when fresh cow's milk is not available. If the baby has been weaned and a wet nurse cannot be procured, probably the best substitute for fresh milk is condensed milk.

In giving condensed milk it must be remembered that it has been *sterilized* and contains a large percentage of cane sugar, so that it is not well to keep an infant upon it for any length of time without adding some other element, such as beef juice and orange juice.

Some of the other patent foods contain milk in a dried form, together with a large amount of malt sugar. Some of these may be given for short times, but never for months at a time without the addition of other elements, as in the case of condensed milk.

Infants fed exclusively on condensed milk, or on almost any of the proprietary foods, are liable to be pale, and many of them suffer from rickets.

No food which does not have milk as a base should be used for infants.

Proprietary Foods. The chief arguments against the use of proprietary foods in general are:

They are inferior in nutritive value to properly modified fresh milk.

They are expensive, costing two or three times as much as cow's milk.

They usually contain a large percentage of sugar and too low a percentage of proteid and fat: essential elements in any food.

The continued use of these foods is liable to produce rickets or some other form of malnutrition.

Scurvy. Infants fed upon any proprietary or sterilized food should have daily some uncooked fruit juice, such as orange or pineapple. When this is not given the infant may develop scurvy. A few teaspoons of fruit juice daily, well diluted with water and given between meals, is all that is necessary to prevent scurvy.

SPECIAL PREPARATIONS OF MILK

Peptonized Milk. Peptonized milk is made by adding a certain amount of pancreatic ferment to milk and bringing the mixture to the body temperature for a given time. Milk which has been over peptonized is bitter to the taste. Written directions for the use of the different peptonizing preparations always accompany the package. There is a limited use for peptonized milk in certain forms of digestive disturbances. It should not be used continuously and only under a physician's directions.

Buttermilk. Buttermilk is sour milk from which the fat has been removed. It is usually obtained as a by-product in the process of making butter. It may be made, however, by souring skimmed milk. The souring process may be aided by the addition of lactic acid bacteria, which are put up by several firms in the form of tablets.

Buttermilk and sour milk have been used as an article of diet from time immemorial. Its use is mentioned more than once in the Old Testament. It is, however, comparatively recently that it has been used in this country as a food for infants. In Holland, however, buttermilk has been used as a remedy for the summer diarrhoeas of infants for several hundred years.

In certain conditions, especially where fat is not well tolerated, buttermilk may be given to advantage. In diarrhoea, especially that form produced by overfeeding with fat, the use of buttermilk is often followed by brilliant results.

The so-called lactone milk may be made from whole milk and thus contains a large amount of fat. Since buttermilk is usually prescribed for babies who stand fat badly, care should be taken to specify skimmed milk.

Buttermilk should always be made from clean milk and should be made fresh daily. It may be used raw and diluted if necessary, or it may be

boiled, and, in order to increase the food value, flour and sugar may be added.

The following is the author's modification of Baginsky's buttermilk formula:¹

FRESH BUTTERMILK	1 quart
Browned wheat flour	1 to 3 tablespoons
Sugar (cane)	1 to 3 tablespoons

Mix together until smooth and put on slow fire and with constant stirring allow to boil for three or five minutes. Divide into a proper number of feedings for twenty-four hours and place on ice until needed. Before feeding the mixture should be thoroughly shaken and warmed to the proper temperature.

Malt soup may be used under much the same conditions as the buttermilk formula.

Malt Soup.

Full milk, one-third quart.

Water, two-thirds of a quart.

White flour, one to two ounces.

Malt soup extract one to two ounces.

Mix flour and water and bring to a boil.

Then add malt extract and bring to a boil.

Lastly, add the milk, stirring constantly and bring to a boil the third time.

Cool off quickly by standing it in iced water.

¹ Buttermilk as an Infant Food, Ramsey, Walter R., *St. Paul Medical Journal*, Jan. 1, 1904.

This food has practically the same caloric value as whole milk.

If the food is too laxative, less of the malt extract should be used.

Casein Milk. Casein Milk is made by curdling whole milk with rennet and then straining out the whey through cheesecloth. The whey is thrown away and the curds mixed with water, forming a smooth mixture like the original milk. By this method all the sugar and most of the salt have been removed. A certain amount of fresh buttermilk is then added and the mixture is ready for use. This preparation should be made and used only under the direction of a physician.

Whey. Whey is made by curdling sweet milk with rennet and then straining off the liquid portion through a fine sieve or cheesecloth.

Whey contains a certain amount of albumen and also all the sugar and salts contained in the milk.

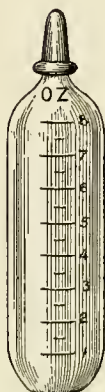
Whey may be used to advantage in certain gastrointestinal affections. It will frequently be retained when milk containing the fat and curd would be rejected.

BOTTLES AND NIPPLES

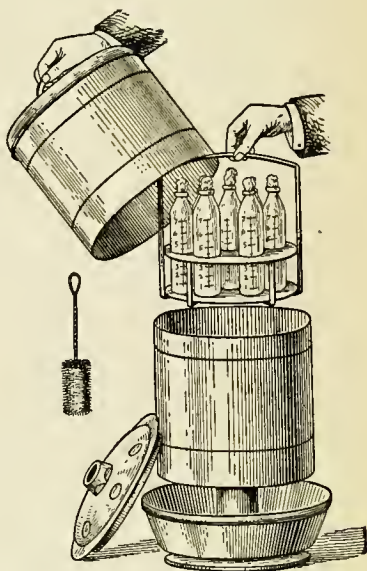
The simple graduated bottles are inexpensive and if care is taken they can be kept clean as well as any of the more expensive varieties.

The nipple should be of the simple variety which can be purchased at any drug store.

Nipples should be selected with small openings, as there is a tendency for infants to get their food



NURSING BOTTLE
WITH CORRECT
NIPPLE



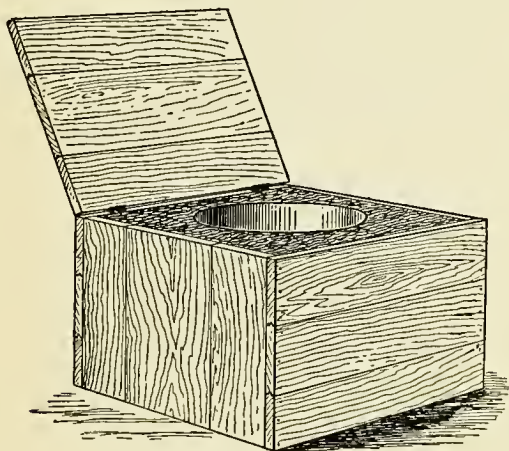
THE ARNOLD STEAM STERILIZER AND
PASTEURIZER (Page 97)

too fast. If the opening is too small it can readily be made larger by heating a small sewing needle to a red heat and burning the opening to the size desired. Blind nipples may be purchased and the openings made the size desired.

STERILIZERS AND PASTEURIZERS

There are a number of these on the market, any of which will be perfectly satisfactory.

A simple arrangement, which is, however, equally efficient, consists of a rack made to hold the proper number of bottles in an upright position (any tin-



A SIMPLE HOME-MADE ICE BOX

smith will make one). This rack should have a handle so that it can be set in a pan of water. This with a dairy thermometer is all that is required in the way of apparatus in the pasteurization, or sterilization, of milk. (See opposite page.)

ICE BOX

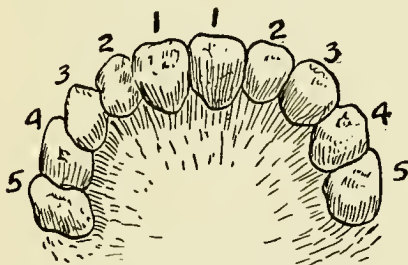
Where a large ice box of the standard varieties is not available a small one, large enough to keep the baby's milk cold, may be made at the expense of a few cents. An ordinary box is procured at the grocery store, say two feet square. In this box is placed another box three or four inches smaller in all dimensions except in height, which should be the same. Between the two is packed sawdust. A lid, which has many layers of newspapers tacked on the inside, completes the ice box. A small amount of ice, one to two pounds, will keep the feedings cold for twenty-four hours.

VII

TEETHING (DENTITION)

The first teeth appear usually from the sixth to the ninth month. There are exceptions when they appear much earlier. There are twenty teeth in the first set, known as temporary, or deciduous, teeth. They appear usually in the following order:

Two lower central incisors, fifth to ninth month.



TEMPORARY OR MILK TEETH

- 1 Central incisor.
- 2 Lateral incisor.
- 3 Stomach or Eye tooth.
- 4 First molar.
- 5 Second molar.

Four upper, two central, and two lateral incisors, eighth to twelfth month.

Two lower lateral incisors and four double teeth, twelfth to eighteenth month.

Four canine teeth (the upper two known as the "eye teeth" and the lower two as the "stomach teeth"), eighteenth to twenty-fourth month.

Four back double teeth, twenty-fourth to thirtieth month.

At one year a child usually has six teeth.

At one and one-half years, twelve teeth.

At two years, sixteen teeth.

At two and a half years, twenty teeth.

The most common causes of delayed and irregular dentition are prolonged illness and rickets.

THE PERMANENT TEETH

The permanent teeth are thirty-two in number and appear approximately at the following ages:

First molars	6 years
Incisors	7 to 8 years
Bicuspids	9 to 10 years
Canines	12 to 14 years
Second molars	12 to 15 years
Third molars (wisdom teeth)	18 to 21 years

When the permanent teeth come in irregularly their position should be corrected during childhood, while the bones are still soft. Skilled dentists can now correct the most extreme irregularities.

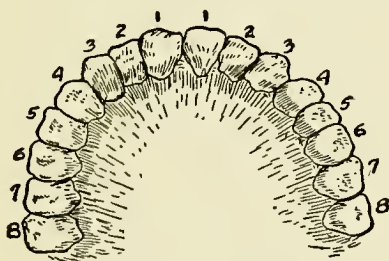
SYMPTOMS DUE TO TEETHING

Contrary to what has generally been believed by the laity, there are very few symptoms of any grav-

ity which can be attributed directly to the "cutting" of the teeth.

It must be remembered that the process of teething is more or less continuous, extending over the first two and one-half years of life. It is, however, just before the time when the teeth appear on the free surface of the mucous membrane that the most pronounced symptoms are supposed to show themselves.

The fact is that the great majority of children get their teeth without any symptoms at all. There are, however, a certain percentage of children, particu-



PERMANENT TEETH

- 1 Central incisor.
- 2 Lateral incisor.
- 3 Canine or Eye tooth.
- 4 First bicuspid.
- 5 Second bicuspid.
- 6 First molar.
- 7 Second molar.
- 8 Third molar or Wisdom tooth.

larly those of a nervous temperament, who, just before the appearance of a tooth, may be fussy, sleep badly, drool constantly, not take all their

food, and perhaps have some slight diarrhœa. There may be a slight elevation of temperature. Upon examination of the mouth there may be found some redness in the region of the prospective tooth.

In the presence of such symptoms the food should be reduced in quantity and quality, and if the symptoms persist a physician should always be consulted.

Severe symptoms of any kind should never be attributed to the teeth, as they are practically always due to some other cause.

The habit of "rubbing the tooth through" should be discouraged, as more harm than good is sure to result. It is rare that lancing of the gums is necessary and is usually contraindicated. In the case of a nervous infant a warm bath at bedtime will frequently relieve the nervous tension and will often be followed by several hours of sound sleep.

CARE OF THE TEETH

The teeth are a very important factor in the process of digestion. It is therefore important that they should be carefully preserved. The accumulation of food on and around the teeth frequently results in destruction of the enamel and the formation of cavities from decay. Decayed teeth are injurious to health in several ways:

Filthy and decayed teeth harbor a great variety of germs, which are swallowed with the food.

With badly decayed teeth it is impossible to properly masticate the food.

Decayed teeth frequently result in the formation of abscesses at the roots and around the teeth. This may be followed by destruction of the bone which holds the teeth in place and in marked enlargement or even breaking down of the adjacent glands. There may be serious poisoning of the general system from absorption. Infected teeth are undoubtedly a common cause of tonsilitis. The author has recently seen a severe affection of the tonsils produced in this way.

The temporary teeth are necessary to the proper development of the jaws and consequently to the position and character of the permanent teeth.

Not infrequently owing to malnutrition the infant's teeth are defective when they appear.

The giving of sweets to children, together with lack of cleanliness, is a potent factor in causing decay.

Every child should have its teeth brushed at least once daily, and at the age of three years should be taught to perform this task itself. The spaces between the teeth should be kept clean from accumulated food by the use of dental floss.

TONGUE TIE

It is rare that the frenum of the tongue requires cutting. If the tongue can be projected beyond the lips, no operation is necessary. Such an operation may frequently result in infection or in severe hemorrhage.

VIII

THE STOOLS AND URINE

The first few stools of a new-born baby are composed of a black tar-like substance called meconium. After a few days, when the baby has had some breast milk, the color begins to be lighter and within a week becomes yellow. Not infrequently just before they become yellow there is a greenish tinge which is often mistaken for "green stools."

The normal color of the stools of a breast-fed infant is about that of the yolk of egg. The consistency is that of thick gruel; later it is mushy in consistency and sometimes partially formed. The number may vary normally from one to three in twenty-four hours.

The stools of a breast baby may vary much, without the variation being of any special significance.

If a baby is well nourished and gaining normally in weight one need not be too critical about the stools. An occasional greenish stool under the above conditions has no special significance. If, however, the stools are persistently green the baby is either overfed or underfed.

If the stools are persistently full of white curds, it is usually overfed.

Greenish, curdy stools practically always mean overfeeding, especially with fat.

On artificial food the stools differ much in appearance, depending upon the character of the food.

The normal stool of an infant fed upon cow's milk diluted with water is canary yellow and of a firmer consistency than those fed on breast milk. When gruels and the different sugars are added to milk the color is changed. Malt sugar, malted milk, and other malted foods usually give the stools a brownish color.

Persistently green stools in bottle fed infants always mean some form of indigestion and the food should be modified.

CONSTIPATION

Much of the constipation from which infants suffer is produced by interference by the nurse or other attendants during the first few weeks of life. The bowels will not move normally unless the lower part of the rectum is full of fecal matter. During the first week of life an infant usually gets little food. After the meconium is passed there are frequently several days required before there is much residue left over from the food. If during this time the infant is given castor oil, suppositories, or in-

jections, the normal process is interfered with at the outset and the proper stimulus in the rectum is lacking. The result is that by the time the nurse goes the infant has the "constipation habit." If breast (or, for that matter, bottle) babies were allowed to go a day or two until their bowels move of themselves, there would be less constipation.

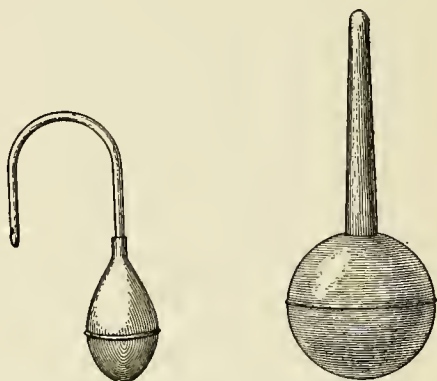
Where constipation is present in breast infants cathartics as a routine should not be given. Frequently a teaspoon of prune juice before or after a nursing will correct the difficulty.

In artificially fed infants where the stools are hard and dry the food should be modified. Habit is an important factor in overcoming constipation. Infants as young as six months may be taught to have a regular time for bowel movements.

Graham Flour for Constipation. Abdominal massage if properly given is often effective. Glycerine suppositories should never be used continuously; they produce a watery stool, but always at the expense of the normal secretions. In older infants and children graham flour gruel or graham bread is a sovereign remedy for constipation, the bran being the laxative element. Coarse foods, fruits and vegetables, plenty of exercise, with regularity in going to stool, are the essential elements in the treatment of constipation. Infants who have suffered much from constipation are frequently much

improved when the cow's milk can be diminished and the other articles of food increased.

Fissures in the Anus. Infants who suffer much from constipation and who have been subjected to much local irritation frequently have fissures in the anus; they are painful and frequently



SOFT RUBBER SYRINGES

result in the infant crying severely when the bowels move.

When constipation is persistent and where there is some digestive disturbance, irrigation of the bowel with normal salt solution (one teaspoon salt to pint of boiled water) introduced by means of a bulb syringe, with a soft catheter attached, may be resorted to.

The continuous use of laxatives, suppositories, or

irrigations will never result in the cure of constipation, but will tend to aggravate the condition.

THE URINE

The urine in infants is of a light amber color. It does not stain the napkin, or only slightly. If jaundice is present the urine contains bile pigment and stains the diaper yellow. Occasionally mothers are much concerned about a red brick dust deposit on the diaper. This has no serious significance and results from the elimination of uric acid. Urine which stains the diaper and has a strong odor of ammonia usually indicates some digestive disturbance. This condition frequently occurs in artificially fed infants who are having more fat than they can tolerate. Blood in the urine may be of serious moment and should always be reported to the physician. Frequent urination, with straining and crying, indicates the presence of inflammation in the bladder. Urine for the physician's use should always be fresh and contained in a clean vessel. The securing of a specimen of urine from an infant is not so difficult as is generally supposed. If the diaper is removed and the baby is carefully watched, a receptacle being at hand, a specimen can usually be procured in a few hours. Not infrequently the placing of a cool sponge over the bladder will result

in the child's voiding urine. If these means are not successful the physician can always furnish a simple appliance for collecting urine both from male and female children.

IX

OVERFEEDING

Certainly the most common cause of digestive and nutritional disturbances in infants is overfeeding.

Many of the serious digestive troubles from which infants suffer during the hot weather (vomiting and severe diarrhœa) are due to overfeeding.

An infant should be fed the least amount upon which it will gain sufficiently in weight and nutrition.

When the stools are large and of a foul odor the infant is usually overfed.

One of the most common causes of skin eruptions (eczema) is overfeeding.

Overfeeding with sugar and starch is usually manifested by sour stools which burn the skin around the rectum.

Overfeeding with fat is manifested often by vomiting, or by typical changes in the stools.

Loss of Weight Due to Overfeeding. Infants who are much overfed usually stop gaining after a time and then lose weight. The proper gain in

weight may frequently be reëstablished by reducing the quantity of food to the right amount.

VOMITING OR REGURGITATION

The most common cause of regurgitation is posture. Any infant will regurgitate a portion of its meal if doubled up or carried about, pressure being upon the stomach.

Other causes are :

Overfilling of the stomach.

Too rich food.

Obstruction to the passage of food from the stomach (pylorospasm or stenosis).

Posture During and Following the Meal. Infants should receive their food slowly and always while lying in a comfortable position on the back or right side, the upper portion of the body slightly elevated.

The bottle should be held by the attendant and the time occupied should not be less than fifteen to twenty minutes. After the food has been taken the infant should remain in the recumbent position. If the baby is uncomfortable, raising it into the sitting posture will often suffice to relieve the stomach of air which it has swallowed with the milk, when it should be put down again. An infant should never be carried about after a meal and should be disturbed as little as possible for at least two hours.

Vomiting. When an infant vomits just before the time for the next meal, the food should be reduced and the time between feedings increased.

When an infant vomits persistently after all simple remedies have been tried, a physician should always be consulted.

When an attack of vomiting occurs in an infant which has heretofore not been in the habit of vomiting, all milk should at once be stopped, and for a few feedings boiled water, barley water, or some other thin gruel given.

If vomiting persists, all food should be stopped and a physician consulted.

Recurrent Vomiting. Recurrent attacks of vomiting are not uncommon in older children, particularly those of a nervous temperament. They occur at irregular intervals and frequently without any apparent cause.

The attack may last for several days, during which time not even water can be retained.

The diet in these children should be carefully supervised and only the plainest food permitted.

After an attack the child, if allowed, will gorge itself with food, with the result that one attack will follow another at short intervals.

Since vomiting accompanies so many other conditions, a physician should always be consulted.

COLIC

Colic is only another name for indigestion. It is practically always produced by overfeeding or improper feeding.

The mistake is often made in thinking that infants are hungry because they cry and take food eagerly, when in reality they are suffering from indigestion due to overfeeding. The taking of food of course only exaggerates the condition. Infants who are nursed at four-hour intervals rarely suffer from colic, while infants fed on a too frequent or irregular schedule are very apt to suffer from indigestion, as the stomach is many times not empty from one meal until another is taken.

On the other hand, infants who are not receiving enough food frequently cry as if from colic. If the stools are small and the infant is not gaining in weight it is presumably not getting sufficient food. The amount of food a breast-fed infant receives can be accurately determined by weighing before and after each nursing.

Soothing Syrups. Soothing syrups should never be given unless prescribed by a physician. They frequently contain opium and are especially dangerous in young infants.

X

DIET FOR CHILDREN FROM ONE TO TWO YEARS

- 6 A.M. One or two tablespoons oatmeal, cream of wheat or other cereal, well cooked and served with milk and a very little sugar. Eight ounces of milk.
- 9 A.M. One or two ounces orange juice diluted with an equal amount of water.
- 10 A.M. One or two slices of toast, zweibach or rusk, soaked up with milk or beef juice. Six to eight ounces of milk.
- 2 P.M. Eight to ten ounces good soup, to which has been added some rice and a little vegetable (carrots, spinach, peas, potatoes). All should be put through a fine sieve and have the consistency of fairly thick gruel.

In addition to this some bread and butter or toast.

Two or three times weekly a part or all of a very soft boiled egg may be given.

After twelve months a tablespoon of scraped rare broiled beef or mutton may be given in addition to a tablespoon of baked or mashed potato. Egg and scraped meat not on same day. The yolk of egg may have to be dispensed with, especially in children

with exudative diathesis, that is, with a tendency to eczema. For dessert:— Apple sauce, prune pulp, or other stewed fruit from which the seeds have been removed.

6 P.M. Dish of cereal, milk toast, boiled rice, sago or tapioca, cup of custard, eight ounces of milk. When egg has been given for dinner custard should not be given on the same day.

When children are constipated, particularly when the stools are hard and dry, bread and plenty of vegetables and stewed fruit should be given.

In some cases where the constipation is persistent the milk may be diminished to advantage. Children should have nothing between meals but water, which should be allowed freely.

The water may be cool, but ice water never should be given to children.

DIET FOR OLDER CHILDREN, AFTER THE SECOND YEAR

The importance of proper diet in older children cannot be too greatly emphasized.

It is a comparatively simple problem for the mother or nurse to restrict the diet of infants up to two or three years. In older children, however, and particularly those of a nervous temperament, it requires sound judgment and great firmness.

In case of the average child, it will be well nour-

ished, or badly nourished, depending upon the character of the food it eats.

The diet should consist of plain, substantial food with a proper balance of fat, proteid, starch and sugar.

To say that a child will not eat this or that is absurd. A child will eat anything in reason that is put before it, if it has the proper discipline and is hungry enough. The old adage "hunger is the best cook" applies equally to children and adults.

It is not uncommon to hear a mother say, "My child cannot eat such and such a thing, and I never could myself." One could hardly expect a child to take a different attitude from that of its mother. Such an attitude is not, however, inherited, but acquired.

If children are allowed to choose their own food it is perfectly natural for them to eliminate the plain food, which is absolutely essential to their development, and choose only those things which tickle their palates, that is, the sweet things. Whenever sweet things are given, which should be in very limited quantities, they should always come in the form of a dessert, after the meal and only when the plain food has all been eaten.

After the second year, milk is not so essential an article of diet as is generally supposed.

Milk is designed for the very young, and among

the lower animals there are none, so far as the author knows, who receive milk from the mother after they reach the age of one year.

Milk is, however, an important article of diet, but in older children it does not take the place of a general mixed diet. Children after one year whose diet is made up too largely of milk are almost invariably poorly nourished.

Drinking Milk Between Meals. Drinking milk or eating between meals destroys the appetite and results in insufficient food being taken at the meals. Unless there is some contraindication to its use, milk should be taken with the meals.

The following diet would be appropriate for the average child of from two to five years:

Breakfast, at 7:30 A.M.

Juice or pulp of half an orange.

A dish of thoroughly cooked oatmeal, or other plain cereal, served with some milk and very little sugar.

Soft egg every other day, boiled or poached (never fried), or a slice or two of crisp bacon.

Toast or graham bread and butter.

Cup of milk or weak cocoa.

Dinner, 12 M.

Cup of soup (any good meat stock), to this may be added rice or barley and some of the vegetables.

Mutton chop, steak, chicken, or fresh fish broiled and finely chopped or ground.

One of the following vegetables: Potato (baked or mashed), carrots, spinach, peas, beans, celery, asparagus tips, squash, all well cooked and finely mashed.

Bread and butter, or rice.

FOR DESSERT

Stewed fruit (very little sugar), such as apple sauce, baked apple, stewed prunes, peaches, pears, strawberries, pineapple, etc., or some simple pudding, such as bread pudding, sago, tapioca, rice, custard, corn starch, etc.

At 4 P.M.

If hungry and the child is having plenty of exercise in the open, a graham cracker or two, or a piece of bread and butter, may be given. If it is found that such a lunch destroys the appetite for supper, it should be discontinued.

SUPPER

At 5:30 P.M.

Milk toast or cereal, custard, stewed fruit, bread and milk.

The heavy meal should be given in the middle of the day and a light meal at bedtime.

Tea and coffee should not be given to children..

The milk and cocoa should be given warm. All milk should be boiled.

SIMPLE ARTICLES OF FOOD AND THEIR CALORIC VALUES

The caloric need of a growing child after two years is about 30 calories per pound of body weight. A child of three years, therefore, weighing 35 pounds, would need approximately 1000 calories to maintain its body weight. If it is having vigorous exercise and is out-of-doors much in cold weather, its needs would be considerably greater.

The caloric or food value of the following simple articles of diet may be of practical value in determining the quantity of food needed in an individual case:

FOOD VALUES

1 qt. whole milk	670 calories
1 qt. skimmed milk	350 calories
1 qt. buttermilk	350 calories
1 pt. skimmed cream	860 calories
Bread, 1 slice, 3 by 4 inches, $\frac{1}{2}$ inch thick ..	100 calories
Toast, 1 slice, same size	100 calories
Zweibach, 1 piece equals $\frac{1}{2}$ slice bread	60 calories
Soda crackers, ordinary size, 3 to 1 oz.	120 calories
Graham crackers, 3 to 1 oz.	120 calories
Cooked cereals, such as oatmeal, cream-of-wheat, rice, mashed potatoes, macaroni, 1 tablespoon	30 calories
1 egg	75 calories
Cane sugar, 3 tablespoons — 1 oz.	120 calories

Loaf sugar, 3 large dominoes, or 6 small ones	
— 1 oz.	120 calories
Green vegetables, cooked and mashed, peas, beans, carrots, spinach, 1 heaping table- spoon — about	30 calories
If butter is added the value is much greater.	
Butter, $\frac{1}{2}$ oz.— 1 in. cube	130 calories
Broth, or beef juice, 1 oz.	7 calories

XI

EXERCISE FOR INFANTS

Exercise is absolutely essential to the proper growth and development of an infant. A young infant gets exercise by crying and by moving its arms and legs.

Morning and evening, at least for a period of fifteen or twenty minutes, the baby should be placed upon a bed, undressed and allowed to kick and move its hands and arms as much as it pleases. All clothing which restrains the movements should be removed. Later, a mattress or folded blanket put upon the floor and surrounded by a "nursery pen" is a convenient way of allowing the baby all the exercise of which it is capable. (See page 56.)

After a child is old enough to run it should be allowed to play about outside, *both winter and summer* several hours a day. (See page 54.)

Children are frequently pushed about in a carriage, or taken in automobiles, when they would be much better off playing in their own yards. Children need fresh air, but they need a proper com-

bination of both exercise and fresh air. Children will usually sit up, stand, walk, etc., as soon as their muscles are sufficiently strong to permit them to do so. All these movements should be voluntary and should not be forced upon them by mechanical devices, otherwise some serious deformity may result. Every case of bow-legs is a case of rickets.

EXERCISE FOR OLDER CHILDREN

In order that older children may develop properly it is also essential that they have a large amount of exercise in the open. That the different muscles of the body be brought properly into play a great variety of movements are necessary.

Children who romp about with each other, running, swinging, turning somersaults, throwing ball, wrestling and a thousand other things, exercise most of their muscles.

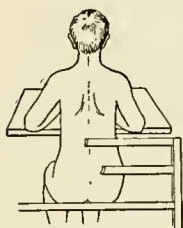
It is pathetic to see children being walked about the streets by a governess or being taken to school in a limousine, when they should be running and playing on the way with other children. If such children later disappoint their parents, the fault will not be wholly theirs. (See page 54.)

Children who are hollow-chested and have a tendency to be round shouldered should have special exercises designed to develop the chest and back muscles. These exercises should be accompanied

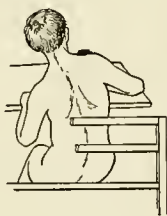
by systematic deep breathing. No shoulder straps are necessary.

Such children should attend a gymnasium two or three times weekly, and the exercises be kept up at home in the interval.

Many times curvature of the spine is produced by bad positions while sitting at the desk in school. Accompanying illustrations illustrate well this point.



RIGHT



WRONG



WRONG

Children with beginning deformities of the chest or of any of the bones should consult an orthopedic surgeon, as much can be done by posture and appliances to prevent further deformity and correct that already present.

XII

DISEASES OF THE RESPIRATORY TRACT

COLD IN THE HEAD. CORYZA. SNIFFLES

Catarrhal inflammation of the nasal passages is perhaps the most common affection of infants and children. Babies a few days old suffer from sniffles. The disease is often contagious and is readily communicated from one to the other by close contact. If one infant in a small ward has a cold in the head, the others are almost sure to get it unless they are kept far apart.

There is often considerable fever and it is not infrequent that the inflammation extends to the larynx and bronchi.

One of the most distressing symptoms is the blocking of the nose and consequent inability to nurse.

Sniffles is an early symptom of inherited syphilis. Persistent sniffles, accompanied by a rash, is always significant in a young baby.

Where the nasal passages are blocked, in simple

coryza, adrenalin ointment will often give much relief.

SPASMODIC CROUP

Croup is a spasm of the upper air passage (larynx), manifested by a hoarse cough and difficult breathing (particularly on inspiration). It may be produced by some inflammation of the upper air passage (taking cold) and is usually much exaggerated at night. A child will frequently seem well when it goes to sleep and will suddenly waken with an attack of croup. Children who are prone to convulsions are liable to suffer from spasmodic croup.

Spasmodic croup is rarely dangerous, but it is most terrifying to the mother.

There is still much confusion in the public mind between "spasmodic croup" and "membranous croup" (diphtheria). (Page 134.) If a croup persists for more than a few hours, a physician should always be consulted, as what is believed to be a spasmodic croup may later prove to be a membranous croup (diphtheria).

Treatment. The room should be kept warm and the air moistened by a steam kettle to which some tincture of benzoine has been added (teaspoon to pint water). A cold pack or ice bag should be applied to the front of the throat. If the difficulty

in breathing is great, one-half to one teaspoon of syr. ipicac may be given, which will usually be followed by vomiting and relief. The child should be kept inside, out of the wind and dust, until the symptoms have disappeared.

BRONCHITIS

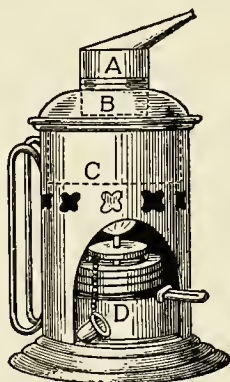
Bronchitis is a frequent affection of childhood. Some children are particularly prone to attacks which come one after another without any apparent cause. Some of the most common predisposing causes to bronchitis are: over-heated houses, especially when the air is too dry; too warm clothing, especially when in the house; insufficient fresh air. When infants or children who live in superheated houses or flats are taken in winter into the open air they are prone to infections of the respiratory tract.

Babies, on the other hand, should never be put out to sleep at zero and below zero temperature. While they need a maximum of fresh air, it must be remembered that *warmed fresh air* is just as pure as *cold fresh air*, and that warmed fresh air at a temperature of 40° to 50° F. is much less liable to produce irritation of the respiratory tract than fresh air at zero or below zero temperatures.

Mouth Breathing Due to Adenoids as Causing Bronchitis. Mouth breathing due to adenoids is a common cause of bronchitis. Children

will frequently cough and have more or less throat and bronchial irritation as long as they continue to breathe through the mouth.

Many times bronchitis occurs in epidemic form and is readily contracted from coming in contact with others who have it. This form frequently be-



SIMPLEX VAPORIZER

- A. Cotton Cone
- B. Cup
- C. Water Boiler
- D. Alcohol Lamp

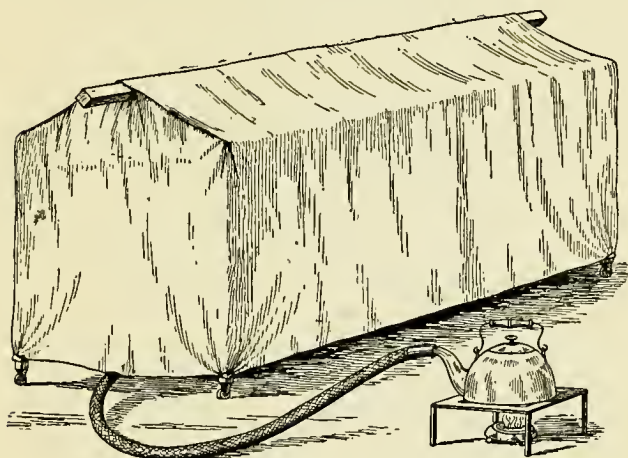
gins as a catarrhal inflammation in the nose and throat and gradually extends to the bronchi. It is usually attended by fever.

Simple bronchitis is best treated by maintaining a uniform temperature 60° to 70° F. and by keeping the air moist with some steam with the addition of tinct. benzoin (teaspoon to pint of water) al-

lowed to simmer over a gas or alcohol flame or on the stove. Fresh air should be admitted constantly.

Exposing infants or children with bronchial affections to zero temperatures is a dangerous proceeding and has nothing to commend it.

Local applications to the chest wall, in the form of



A SIMPLE ARRANGEMENT FOR STEAMING WHICH CAN BE FITTED TO THE CHILD'S BED

packs, mustard plasters, warm oil, etc., are undoubtedly of some benefit.

Care must be taken in giving cough syrups unless they are prescribed by a physician, as they frequently contain opium, and it must be remembered that infants are particularly susceptible to opium in any form.

PNEUMONIA

Pneumonia is an inflammation of the lungs in which a portion of the lung becomes "solid." Pneumonia is usually divided into two classes:

Lobar pneumonia.

Broncho pneumonia.

Lobar pneumonia is often limited to a portion (lobe) of one lung. The onset is usually sudden, beginning with a chill, or, not infrequently in infants, with a convulsion. The breathing is hard and catchy and the inspiration usually accompanied by a grunt. The fever remains high throughout the course of the disease.

The disease, as a rule, runs a rapid course of from five to nine days and ends usually by a crisis, the temperature dropping to normal within a few hours. The drop in temperature is generally accompanied by an improvement of all the symptoms.

Lobar pneumonia is a serious and dangerous affection, and a physician should always be in attendance.

BRONCHO PNEUMONIA

Broncho pneumonia accompanies a general bronchitis. There may be numerous small areas of consolidation in the lungs. The disease may be se-

vere or mild, and usually ends by lysis, that is, the symptoms subside gradually.

A bronchitis which is accompanied with high fever is likely to be a broncho pneumonia.

In the case of pneumonia, as in bronchitis, fresh air is of the greatest importance. It must be again remembered that fresh air is not necessarily cold air.

GRIPPE (INFLUENZA)

Grippe is an acute infectious disease, extremely common in children. It is readily communicated from one person to the other, frequently by kissing.

The disease is characterized by inflammation of the mucous membranes of the respiratory and digestive tracts.

An extension of the infection to any of the organs of the body may occur.

Pneumonia is a common complication and in young infants it is followed many times by serious results.

Extension of the inflammation to the middle ear and the other sinuses is common. A physician should always be in attendance.

XIII

THE CONTAGIOUS DISEASES

The diseases which are generally considered as belonging to this list are as follows:

Tuberculosis,
Diphtheria,
Scarlet fever,
Measles,
German Measles,
Smallpox,
Chicken pox,
Mumps,
Whooping cough,
Erysipelas,
Gonorrhea,
Syphilis,

Many of the forms of tonsilitis, nasal, and bronchial infections, etc.

Such diseases as typhoid fever may also be contagious under certain conditions.

TUBERCULOSIS

Tuberculosis is a disease produced by the tubercle bacillus. It gains entrance to the body usually

either through the respiratory or digestive tracts.

The disease is not usually inherited, but a certain predisposition to it may be. The most common way in which a child contracts the disease is by direct contact with some one who has it. This may be the mother or some other member of the family. Since the lungs are a common location of the disease the sputum is usually loaded with the tubercle bacilli. The greatest care must therefore be taken lest a mother or attendant who is suffering from tuberculosis infect the baby. The writer recently saw a whole family of children who had been infected in this way.

The locations most commonly involved are: the glands, the bones, the lungs, and the coverings of the brain and spinal cord. Milk, according to many authorities, is a frequent source of tuberculosis in infants. The frequency with which milk-cows suffer from the disease, makes the milk a probable source of infection.

Eighty per cent. of adults at some time during their lives have been infected to some degree with tuberculosis. This does not mean that all of them have had active tuberculosis. Many of them overcome the infection before it produces symptoms.

So much can be done for tuberculosis patients during the early stages of the disease, and often so

little later, that it is of the utmost importance that the diagnosis be made early.

All persistent coughs accompanied by fever and loss of weight, glandular enlargements, distention of the abdomen which is not relieved after a cathartic, painful joints, particularly the knee and hip joints, should be viewed with suspicion, and the advice of a physician sought at once.

All discharges from the nose and throat of patients suffering from tuberculosis of the throat and lungs should be destroyed. The stools are also possible sources of infection.

Mothers suffering from tuberculosis in any form should not nurse their babies. The nursing exposes the baby to infection and reduces the mother's vitality, thereby lessening her chance of recovery.

DIPHTHERIA

Diphtheria is a disease characterized by inflammation and the formation of a false membrane, usually in the upper air passages, and severe general poisoning of the system. The disease is produced by the diphtheria bacillus.

The discharges from the mouth and nose contain the germs of the disease.

The time necessary to contract the disease after the infection enters the throat is from twenty-four hours to several days.

Diphtheria has been known since time immemorial, but it is only during the past thirty years that it has been possible to differentiate it from other affections of the throat, tonsilitis, spasmodic croup, etc.

The death rate varies much in the different epidemics, but before the days of antitoxin it was frequently as high as thirty-five to fifty per cent.

Since the discovery by Behring of antitoxin the death rate is not now over six to ten per cent.

The disease usually begins suddenly with sore throat, vomiting and fever. The infection most frequently begins with the formation of membrane on one or both tonsils. The disease, however, may begin first in the nose or in the larynx. All cases of sore throat with membrane or of croup which does not subside in a few hours should be seen by a physician.

The chances for recovery from diphtheria depend upon the earliness with which antitoxin is given.

If antitoxin is given within the first twenty-four hours the death rate is zero.

If delayed until thirty-six or forty-eight hours the death rate jumps to six or eight per cent., and after this it rapidly increases.

It is criminal, in the light of our present knowl-

edge, for a parent or guardian to refuse or neglect to have a child suffering from diphtheria given antitoxin.

I have seen the death rate, in the City and County Hospital in St. Paul, diminished by the use of antitoxin from thirty-five to six per cent.; and this is an institution where only the severest cases are sent for treatment.

The worst thing which will happen as a result of a dose of antitoxin is a "crop of hives," which may be inconvenient, but not dangerous.

Antitoxin does not produce paralysis, as is frequently believed. The paralysis is produced by diphtheria poison which was formed before the antitoxin was given.

A too frequent mistake is made in allowing a sore throat to go for several days without calling a physician, believing the child to be suffering from tonsilitis.

In many cases where there is a membrane in the throat there is no way of telling whether it is diphtheria or a simple tonsilitis, except by making a culture or by examining some of the membrane under the microscope.

If all cases of membranous sore throat were at first assumed by the mother to be diphtheria, and a physician called, there would be very few deaths from diphtheria.

Antitoxin should always be given, even in the cases which are apparently mild.

Diphtheria patients should be kept in the recumbent position for several weeks, as the most frequent cause of death is heart paralysis.

The danger of paralysis of the heart muscle, as well as that of other muscles, is not past when the throat symptoms disappear. The danger perhaps is greater during the second and third weeks than during the first. The pulse should be taken daily by a trained attendant, and in case there is much variation in the rate, or if the pulse should become slow or intermittent, the physician should be summoned at once.

Sitting up in bed suddenly is not infrequently followed by sudden death in cases where the heart is weak, even where the child to all outward appearance is well.

It is always difficult to convince parents that a dangerous heart affection exists when the child seems otherwise perfectly well. It is frequently necessary to have the physician demonstrate the difference between the pulse of a well child and that of the sick one, and to show the mother the difference in the location and size of the heart.

In membranous croup (laryngeal diphtheria) the membrane forms in the larynx or extends from

the throat to the larynx, the added danger of course being the blocking of the passage to air.

These are serious cases and demand constant watching. The child should be placed in a steam tent, and, if possible, should be sent to a hospital, where, in case of a serious blockade in the air passage, a tube may be introduced and the child's life saved thereby.

During an epidemic of diphtheria, as well as of any other contagious disease, BOIL ALL MILK. Contagious disease follows altogether too frequently in the WAKE OF THE MILK WAGON.

SCARLET FEVER

Scarlet fever is an acute contagious disease characterized by the sudden onset of vomiting, fever, sore throat (frequently with membrane), and the appearance on the skin of a fine, characteristic rash, scarlet in color.

The cause of the disease is as yet unknown, but the constant appearance of a certain organism in the throat (*streptococcus*) makes it probable that that is the exciting cause.

All secretions from the throat, nose, and ears are undoubtedly infectious, as well as the urine and the stools. The time required after exposure until symptoms appear is from one to five days. The

disease varies much in severity in individuals, as well as in the different epidemics.

Because one child in a family has the disease in a light form is no reason why another child in the same family may not have a malignant attack.

No child should ever be exposed to scarlet fever with the idea that he "is bound to get it sometime."

Scarlet fever must always be regarded as a serious disease and one capable of producing grave and permanent changes in different organs of the body.

The disease itself may be virulent enough to produce death during the first few days.

The glands of the neck often become involved and not infrequently break down and form abscesses. Middle ear abscess is of common occurrence and may be followed by a chronic discharge, with impaired hearing.

Acute inflammation of the kidneys, with partial or complete suppression of urine, is a frequent and dangerous complication. The kidney changes, even if the patient recovers, are liable to be more or less permanent.

When scarlet fever is suspected a physician should always be consulted.

Even in mild cases the urine should be examined occasionally, even several weeks after the patient is apparently well.

The disease is contagious for a variable time, probably for six to eight weeks, or as long as there is any discharge from the nose, ears or throat. What part the "scaling" plays in spreading the disease it is impossible to say.

MEASLES

Measles is an acute contagious disease characterized by a gradually developing fever, inflammation of the mucous membranes of the eyes, nose, throat and bronchi, accompanied by cough, sneezing and sensibility to light, and at the end of three to five days the appearance of a characteristic blotchy rash which spreads over the entire body. The cause of the disease is unknown. Incubation period is from ten days to two weeks. The disease is very contagious and is capable of being spread from the very onset of the symptoms, three to five days before the appearance of the rash.

The most common complication in measles is pneumonia. There is always present a bronchitis of a varying degree.

If the cough and fever persist for more than twenty-four hours after the rash is fully out, a physician should always be consulted.

For the disease itself it is important to keep the patient in bed, the air should be fresh but not cold, and the eyes protected from bright sunlight.

The diet should be light, the bowels kept free, and plenty of water given. In uncomplicated cases no medicine is required.

GERMAN MEASLES

A disease characterized by a rash resembling measles. There are very few general symptoms. Sometimes slight fever and sore throat. The glands behind the ear are liable to be somewhat enlarged. The patient should be kept in bed for a day or so and fed lightly and the bowels kept open.

SMALLPOX

A contagious disease characterized often by severe general symptoms: headache, pain in the back and legs, and the appearance on the skin of an eruption which has a shotty feeling to the touch. Soon each papule becomes capped with a pustule.

In severe cases these pustules are so thickly crowded together that they form, when they dry, dense crusts. The disease is frequently fatal unless the patient has been successfully vaccinated. (See chapter on Vaccination.)

CHICKEN POX

An acute contagious disease characterized by fever and general indisposition and on the skin by an eruption which, unlike smallpox, has a vesicle full of serum instead of pus. In some cases it is

difficult to tell whether the disease is chicken pox or a mild smallpox. A physician should always be called in order to make a diagnosis.

MUMPS

A contagious disease characterized by some general symptoms: fever and indisposition and swelling of the parotid gland. The swelling is in front and below the ear; not infrequently the ear stands out from the head. The chief danger is the possibility of involvement of the testes in boys and the ovaries in girls. An inflammation of these organs may result in the destruction of their function. Patients suffering from this disease should be kept in bed and be under the supervision of a physician.

WHOOPIING COUGH

A contagious disease occurring usually in epidemics, and characterized by spasmodic attacks of coughing, accompanied by difficult inspiration (whooping).

Many cases of whooping cough never "whoop," so that it is difficult often to make a diagnosis.

It is always suggestive of whooping cough when a child awakens two or three times during the night out of a sound sleep and has a paroxysm of coughing and does not cough at all in the interval.

Whooping cough must be regarded as a serious

disease. The death rate is high, especially in young and feeble children, in whom pneumonia is not an infrequent complication.

Many children vomit with every paroxysm, and as a result become much depleted in health from lack of food. In these cases the food should be given in liquid form and rather frequently, every three or four hours. In many cases an adhesive strip, drawn rather tightly around the body at the level of the diaphragm, will prevent much of the regurgitation of food.

In uncomplicated cases little is to be gained from medicine. Some of the simple cough mixtures will sometimes relieve the laryngeal and bronchial irritation. There are hopes that in the near future some vaccine or serum may be found which will control the disease.

The important things in the treatment are: fresh air and food. The more time the patients spend in the open air, the fewer paroxysms they will have. Many of the remedies common in use among the laity are harmful; such things as illuminating gas are dangerous to health.

The characteristic cough persists for a variable period of from six weeks to several months. The disease, however, is probably not contagious after four or six weeks.

If there is fever and any difficulty in breathing

between the paroxysms a physician should always be consulted.

All children with whooping cough should observe quarantine for several weeks.

ERYSIPELAS

Erysipelas is an acute contagious disease characterized by a localized inflammation of the skin with marked tendency to spread by continuity. The infection is due to a streptococcus.

The infection takes place usually through some wound, many times only a slight abrasion. It begins usually with a small red spot, which rapidly spreads in all directions. The infected area is intensely red and raised noticeably above the normal skin.

The face is the most common seat of infection, but any part of the body may be involved.

The affected area is swollen and edematous and frequently there are small blisters filled with serum on the surface. During the course of the disease, which lasts for a variable time, there is fever and much general prostration.

There is a marked tendency to an inflammation of the kidneys.

The disease is especially serious in young and feeble infants.

A physician should be called at the onset.

GONORRHEA

A disease produced by the gonococcus. It is capable of producing an inflammation of almost any of the mucous membranes, but is particularly prone to involve the genito-urinary tract and the eyes.

Perhaps as high as eighty per cent. of all cases of blindness are due to this disease.

Many infants are infected at the time of birth from the mother's vaginal secretions.

The disease is particularly contagious and is widely spread by means of soiled linen or utensils.

Whenever a discharge appears, either from the eyes or the vagina or urethra, a physician should at once be consulted; some of the discharge should be spread upon a glass slide, stained and examined under the microscope to determine the nature of the disease.

When one or both eyes are infected with gonorrhea the best medical aid possible should be sought. Irrigations and medication will be necessary every hour during the day and night. Even with the most thorough and heroic measures it is often impossible to save the sight.

In case of gonorrheal infection of the genito-urinary tract in infants and children the utmost care will be required to prevent infection of the eyes by means of the hands. Irrigations and proper medi-

cation will be required extending over a period of many weeks, and perhaps months, before a complete cure results.

SYPHILIS

A venereal disease communicated from one to another by contact or by inheritance.

Infants frequently have the disease at birth, although marked symptoms may not appear until the infant is several weeks old.

One of the most common early symptoms is "sniffles" and the appearance of an eruption on the skin. The eruption, which is variable in character, usually involves the soles of the feet, the palms of the hands, and the skin around the mouth and anus.

A physician should always be consulted and the truth told to him. If proper treatment is begun early and maintained for a sufficient time, many of these infants recover, to all appearances, completely. Where there is any doubt about the diagnosis a blood examination of both parents, as well as of the infant, should be made (Wassermann).

The disease is very contagious and nurses should exercise great care not to become infected. Syphilitic children should always nurse their own mothers (never a wet nurse). If put on an artificial food their chance of recovery is relatively small.

QUARANTINE

When any member of a family is suffering from a contagious disease the parents are under moral obligation to themselves and to the community, even if not required by law, to maintain as thorough a quarantine as possible.

It is surprising how zealous parents frequently are that strict quarantine shall be observed by every one but themselves.

A child suffering from such a serious disease as diphtheria or scarlet fever should at once be isolated from other members of the family. If possible a nurse should be employed. It is always dangerous for the mother to undertake the care of the sick child and at the same time administer to the needs of other members of the family.

A room should be selected as far removed from the others as possible, with a bath room in connection. An open fireplace or wood stove is an important adjunct to any sick room.

All hangings and rugs should be removed. Toys and books should be limited to those which may be burned.

All dishes and soiled clothing should be kept separate and disinfected by boiling.

A clean gown should be worn by the nurse or attendant and removed before leaving the room,

and the hands should always be washed thoroughly.

Milk bottles should always be boiled before returning them to the dairy.

It is a mistake to expose children to any contagious disease with the idea that they are sure to get it sometime anyway.

Such a disease as whooping cough, which is not usually quarantined by the departments of health, is attended by a large death rate, especially in young infants, and one is morally culpable if he exposes his own or other people's children to the disease.

Time of Quarantine. There is no way of telling when many diseases cease to be contagious. It is therefore important to keep the child isolated long enough so that there is no longer any possibility of its carrying infection.

DISINFECTION AND FUMIGATION

Before a child who has had a contagious disease is allowed to mix with other members of the family, or community, it should have a thorough bath and shampoo and then be rubbed with alcohol or a 1-2000 solution of bichloride of mercury. All toys and books should be burned.

All clothing should be immersed for several hours in a carbolic acid solution, one ounce to two quarts of water. It may then be removed to the laundry

and boiled. Such things as mattresses should be so arranged that they can be thoroughly fumigated.

The windows and doors should be sealed and the room charged with formaldehyde gas and allowed to remain closed for twenty-four hours.

Formalin candles may be purchased at any drug store, with accompanying directions for their use. Where the department of health does the fumigating it should be seen to that it is properly done.

After the room has been opened the woodwork and walls should all be gone over with a solution of bichloride of mercury 1-1000, and if the walls are papered, repapering should be done, if possible. These last precautions are to be observed especially in scarlet fever.

XIV

MISCELLANEOUS

MELENA NEONATORUM (BLEEDING OF THE NEW BORN)

Bleeding in the new-born infant may occur from the cord or from any wound made by instruments or otherwise at birth. This is more apt to occur in bleeders or those in whom jaundice is present.

The most common form of bleeding, however, is that which occurs from the stomach, in which the infant vomits blood, or from the bowel or urinary tract, in which blood is found in the urine and stools. The bleeding is apt to occur during the first few days after birth.

The condition is serious, but not necessarily fatal. The administration of solutions of gelatin by mouth and hypodermically is often followed by cessation of the bleeding. It is frequently necessary to resort to the injection of blood serum, or even the transfusion of blood from some other person to the veins of the infant.

No time should be lost in summoning a physician at the first appearance of bleeding in an infant, so

that proper treatment may be started at once; otherwise many infants will succumb who might be saved.

JAUNDICE OF THE NEW BORN

Jaundice is a common affection of the new-born infant. In mild cases it has no special significance and after a week or two generally disappears.

Extreme cases sometimes occur attended with fever and great prostration. This condition may result from infection of the navel. Where the jaundice is progressive and no fever is present there may be congenital absence of the bile ducts.

CONVULSIONS

Some infants are particularly prone to convulsions. In these children every attack of indigestion, or the onset of any infection, is liable to be followed by a convulsion. Such children should be fed most carefully and always under a physician's directions, as much can be done by diet and other means to prevent their recurrence. When such attacks recur at intervals the possibility of epilepsy must always be considered.

In all cases where a convulsion occurs, the bowels should be emptied as quickly as possible by a high enema, and as soon as practicable after the attack is over a dose of castor oil given. A physician

should always be sent for. All food should be withheld for twelve or twenty-four hours and only water given.

A warm bath at 105° F. to which some mustard has been added will bring the blood to the surface and relieve the internal congestion.

At the same time the head should be kept cool with cold cloths or an ice bag.

If the temperature is high the child may be wrapped in a cool pack, made by wringing a large bath towel out of cool water, one-third alcohol. It should then be rolled in a blanket and the pack renewed when necessary.

When hot baths are given, great care should be exercised that in the excitement the infant is not burned. Worms, teething, and adherent foreskin are overestimated as causes of convulsions.

WORMS

Intestinal worms occur rather frequently in children. They are not, however, nearly as frequent as generally supposed.

They rarely occur until the infant has been put on a mixed diet.

The varieties of worms which are common to children are the following:

Round worm, two to three inches in length and the size of a small angle worm.

Pin, or thread, worm, one-third to two-thirds of an inch in length and about the thickness of a No. 36 thread.

Tape worm, varying from three to ten feet in length and divided into small segments.

These parasites enter the intestinal canal usually by means of the food.

Eating uncooked meat is the common cause of tape worm.

There are no definite symptoms which can be said to be characteristic. Such symptoms as grinding the teeth, picking the nose, restlessness in sleep, do occur in children who have worms, but they also occur from many other causes.

When children are suspected of having worms they should be given a large dose of castor oil and the stools watched. If worms are present usually some will appear. If none appear and there is still doubt a specimen of the stool should be taken to a physician for examination.

If worms are present in the intestinal canal eggs will be found under the microscope.

Worm powders should never be given to children except when a definite diagnosis of worms has been made, and then only under a physician's direction.

Not infrequently serious poisoning occurs by giving worm-remedies and usually without any worms being present.

Round worms infest the small intestine principally.

Pin, or thread, worms inhabit the lower part of the colon and rectum and occur in the stools in the form of tiny threads. They produce intense irritation around the rectum.

In girls they may gain access to the vagina and even the bladder.

They are readily gotten rid of by emptying the lower bowel once daily for a week with an infusion of Quassia (1 pint) and by keeping the child's hands tied so that it cannot scratch itself around the anus.

If there is any possibility of contamination, the finger nails should be kept scrupulously clean, since by this means children may reinfect themselves through the food over and over again.

The presence of a tape worm may usually be determined by watching the stools for segments, particularly after a brisk cathartic. These sections should always be preserved in water and taken to the physician for examination.

When a remedy has been given to expel the worm, care should be taken to preserve every part which comes away, for the physician's examination. If the head of the worm has not been expelled the worm will usually grow again.

ADENOIDS

Every child has a certain amount of lymphoid or adenoid tissue in the throat behind the nose. When there is any marked increase in the amount of this tissue the child is said to have adenoids. As a result there is obstruction to breathing through the nose (the proper channel) and the child is compelled to breathe through the mouth (the improper channel).

In climates of extreme changes, probably one-third of all children have adenoids to some extent.

It is not uncommon to see children with adenoids at birth. They cannot breathe through the nose and cannot as a consequence nurse properly until the obstruction has been removed.

Children who have adenoids of any size, sleep with their mouths open, snore, and are restless in their sleep. The glands at the side of the neck are usually somewhat enlarged. Progressive deafness due to adenoids is common. Infection of the adenoid tissue frequently leads to inflammation of the middle ear, with the formation of an abscess.

If mouth-breathing persists for any length of time the face and mouth become deformed and assume a typical appearance. There is usually some deformity of the chest-wall, due to improper breathing. In marked cases the mentality is slug-

gish, and as a result the children fall behind in their school work.

Whenever there is persistent obstruction to the breathing through the nose that obstruction should be removed.

The operation for the removal of adenoids is a simple one, involving little, if any, danger to life. In many cases it may be done without giving an anæsthetic.

ENLARGED TONSILS

Adenoids and enlarged tonsils frequently go together. Many children, however, who have enlarged tonsils have no symptoms as a result.

Moderately large tonsils causing no symptoms: sore throat, fever, or large glands at the angle of the jaw, do not require removal. It were well, however, if such children could be taught to gargle the throat daily, at bedtime, and at the same time brush their teeth with some simple alkaline solution, such as Seiler's Solution.¹ By this means particles of food would be prevented from collecting in the crypts of the tonsils, thereby producing more or less inflammation.

Tonsils, however, which are enlarged and often inflamed, frequently contain pockets of pus which poisons the system and may, and often does, pro-

¹ Seiler's Tablets, under the name of Alkaline and Anti-septic Tablets, can be purchased at any drug store.

duce serious complications, such as rheumatism and heart affections. Such tonsils should be removed as soon as possible after an attack.

ENLARGED GLANDS

Some children suffer at an early age from enlarged glands in the neck. These glands, varying in size from that of a pea to a hazel nut, may form a chain extending from the mastoid process to the clavicle (collar bone); or the glands at the angle of the jaw, on one or both sides, only may be enlarged.

Formerly children with enlarged glands were said to be "strumous," and it was thought that practically all enlarged glands were of tubercular origin.

It is true that children of certain families are particularly prone to enlargement of the glands, but most of them are not tubercular.

Many enlarged glands in the neck come as a direct result of infections from the throat. Children with enlarged tonsils and adenoids are very liable to have enlarged glands of the neck as a result of direct infection from these organs. After possible sources of infection from the throat have been removed the general nutrition of the child should be in every way improved.

Sudden enlargement of the glands in the neck should always be followed by a careful examination

of the throat, in order that some serious infection, such as diphtheria, may not be overlooked.

RHEUMATISM

Inflammatory rheumatism is now believed to result from an infection. The source of the infection may be unknown, but in many cases it is undoubtedly from the throat and nose. Abscess of the tonsils is a more frequent source of rheumatism than was formerly supposed. It does not, however, follow that every tonsil which is larger than normal should be removed.

Children with inflammatory rheumatism are prone to suffer from some involvement of the heart, particularly of the valves and the serous covering (pericardium). Children who have any inflammatory involvement of the joints should remain in bed longer than may seem necessary, because of the possible heart involvement. Children with inflammatory rheumatism should always be under the care of a physician and long after they are apparently well they should be taken occasionally for examination.

CHOREA (ST. VITUS' DANCE)

This affection is not uncommon in children as they approach the age of puberty (maturity). The symptoms consist in involuntary movements of the voluntary muscles. In some cases these movements

are so exaggerated as to absolutely incapacitate the child from walking or even from feeding itself. The bladder and bowel are rarely involved. This condition is sometimes attended by slight fever and not infrequently by pains in or about the joints. The frequency with which there is an involvement of the heart similar to that in rheumatism, has led many to believe that the diseases have a common origin. Children with chorea should always be under the care of a physician.

Absolute rest and nutritious food are the two important factors in the treatment of this affection.

EARACHE

Earache usually occurs as a result of an infection of the middle ear, extending up the eustachian tube from the throat. When the inflammation is mild and there is no accumulation of fluid behind the drum, much relief may be gotten from dropping into the ear a solution of 2 per cent. carbolic acid in glycerine. If pain and temperature are persistent a physician should be consulted. Abscess of the middle ear in infants is of common occurrence.

GOITER (THICK NECK)

Goiter is an enlargement of the thyroid gland. The condition is common in girls at about the time of puberty.

Unless the enlargement is progressive and accompanied by symptoms, such as shortness of breath, rapid heart, or some prominence of the eyes, it may be disregarded. In many cases the enlargement does not progress and even diminishes after adolescence is well established. In case there are any symptoms which might be attributed to the goiter a physician should be consulted.

CRETINISM

Cretinism is an abnormal condition in infants, produced by a congenital deficiency of the thyroid secretion. The infant may seem perfectly normal at birth, but after a few months it is observed that it does not develop properly, although the food is adequate.

The mental condition remains as undeveloped as the physical.

The skin is dry and not infrequently covered by an abnormal amount of hair. The point of the tongue in many cases remains almost constantly between the lips.

The long bones are all shorter than normal and the fingers present a stubby appearance.

The treatment of this disease consists in supplying the necessary amount of thyroid extract, which is obtained from the thyroid gland of the sheep.

If given in proper amounts, early and persistently,

these children frequently develop almost normally.

The treatment should always be given under the supervision of a physician, as it is quite possible to get marked and even dangerous symptoms from overdosing with Thyroid Extract.

The administration of Thyroid Extract should be continued indefinitely, sometimes for life.

RICKETS

Rickets is a disease of nutrition produced usually by improper food. Artificially fed infants are particularly prone to the disease, and especially those fed upon the patent foods, which are low in fat and proteid.

Frequently the first symptom is sweating about the head. It will be noticed that after the baby awakens from sleep the pillow is wet with perspiration. It is restless, sleeps badly, and cries when lifted, as if from pain. Not infrequently after a child has begun to walk it suddenly stops and makes no further effort in that direction, but sits, moving its legs, if at all, reluctantly. The most marked changes are in the bones, which are markedly lacking in lime salts. The bones, during rickets are particularly prone to deformity. The most obvious changes occur at the ends of the long bones, where growth is most active. This is most apparent at the wrists and at the junction of the ribs with the

sternum. Bowlegs are common in children who have rickets, and particularly if allowed to walk while the bones are soft.

The square shape of the head is another characteristic symptom of rickets and delayed closure of the large fontanel is the rule.

Children who have proper food and are well nourished will rarely develop rickets. Infants should receive breast milk, and after eight to nine months should have some additional food, such as beef juice, orange juice, and a little toast or other starchy food well cooked. Children who are forced to have artificial food should have properly modified cow's milk, with the addition, after five or six months, of beef juice, orange juice, and if they do not tolerate cream well, some cod liver oil or olive oil (one-half to one teaspoon three times daily).

With the first evidence of rickets a physician should be consulted. Deformities are much more easily prevented than corrected.

SCURVY

Scurvy is a disease of nutrition due usually to the long continued use of some patent food or to milk which has been sterilized too long (boiled from twenty to thirty minutes). It practically never occurs in breast-fed infants.

The symptoms are at first indefinite. The infant is pale, easily tired, sleeps badly, and frequently cries if the legs and arms are handled. Later there is bleeding into the gums around the teeth and there is often free bleeding if the gums are touched. There are frequently hemorrhages along the bones of the legs and arms, which often manifest themselves on the skin in the form of black and blue spots.

Prevention. Breast-fed children practically never have scurvy. Children on sterilized foods should always have in addition, some uncooked fruit juice (orange juice). No other medication is necessary.

HIVES. URTICARIA. NETTLE RASH

Urticaria is characterized by an eruption on the skin consisting of circular or spiral elevations (wheels) scattered over various portions of the body. The color of the spots is usually a reddish pink, frequently with a white center. The size varies from one-eighth to several inches in diameter.

Urticaria is frequently accompanied by gastrointestinal disturbance and some rise in temperature.

Certain articles of diet, such as strawberries, eggs, shell fish, etc., frequently produce the eruption in

susceptible individuals. Such individuals are said to have an idiosyncrasy to these particular foods.

The skin is usually intensely itchy and whenever scratched becomes red and slightly raised above the surface.

Treatment. The intestinal canal should be emptied by a dose of castor oil and the suspected food eliminated from the diet.

In relieving the intense itching sponging with a solution of soda is sometimes effective. It will, however, frequently be necessary to resort to some simple sedative, such as asafetida, until the toxic substance has been eliminated from the system.

EXUDATIVE DIATHESIS. MILK CRUSTS. ECZEMA

A considerable number of infants within the first few months after birth have a scaly condition of the scalp which to the ordinary observer resembles dirt. It is, however, an exudate, and when it is removed the skin underneath is inflamed. The more the surface is irritated by rubbing or scratching, the more serum is exuded and soon crusts are formed. Frequently pus forms under the crusts and the whole scalp rapidly becomes involved, and not infrequently the face, hands, and in fact any part of the body.

It is a mistaken idea that the breast milk is responsible for the condition. The disease is inher-

ited, but is much exaggerated by overfeeding, especially with fat.

These cases should be kept on the breast, but not overfed. If they do badly on the breast they usually do worse on any other food.

In bathing these children soap should be used as little as possible. The hands should be restrained so that the infant cannot scratch the skin, which is always intensely itchy; otherwise no treatment will have any effect.¹

If the condition does not respond to simple remedies a physician should be consulted. The treatment must combine proper feeding with local applications to the skin.

A simple eczema may result from irritants, such as soap, without any constitutional cause.

SPRU. THRUSH. STOMATITIS

Spru, or Thrush, is an infection of the mucous membrane of the mouth, characterized by the appearance of small white flecks which may be limited to the inside of the lips and cheeks, but not infrequently also involves the tongue and roof of the mouth.

Forcibly swabbing the mouth, or the continuous

¹ See article by the author, "Exudative Diathesis in its Relation to Infants." *St. Paul Medical Journal*, October, 1910.

sucking on a rubber nipple or pacifier, may predispose to this condition.

A more severe form of infection, known as stomatitis, in which ulcers of the mucous membrane occur, is also common.

Treatment. Remove all mechanical irritation. It may be necessary to feed the infant from a spoon until the spots disappear. The mouth should be washed with a boric acid or boroglyceride solution after each feeding. If ulcers are present it may be necessary to have them cauterized. If the food is at fault it should be properly modified.

SUMMER DIARRHŒA

During the hot summer months many infants suffer from digestive disturbances of varying degrees of severity. These attacks may be nothing more than a slight diarrhœa accompanied perhaps by vomiting and fever, or they may be so severe as to endanger the child's life.

The death rate in infants during the hot weather is greatly increased, particularly in large cities. The most common causes of disturbances of the digestive tract during hot weather are:

1. Artificial feeding.
2. Overfeeding.
3. Impure milk.
4. Too much clothing.

The death rate in artificially fed children is 8-10 times as great as in children fed at the breast. The amount of food required for the body needs during the hot weather is much less than during cool weather.

During hot weather the chance for milk to undergo putrefactive changes is much greater than during cool weather.

During hot weather infants should be dressed so that they are comfortable. The heavy woolen clothes should be removed, as infants do not stand extreme heat any better than they do extreme cold.

When an infant begins to have any digestive disturbance, stop all food at once, and for twelve or twenty-four hours give only boiled water or a little barley, rice or oatmeal water. The bowels should be emptied by one or two teaspoonfuls of castor oil or other effective laxative, and the dose not repeated. For several days following the food should be greatly restricted. The cream should be removed from the milk and only boiled skimmed milk given. If the stools are sour and green, all sugar should be left out and the food sweetened if necessary with saccharine (one tablet to pint of food). If the symptoms do not promptly subside a physician should be consulted.

Serious digestive disturbances attended by fever,

vomiting and diarrhœa and great prostration are never due to teething.

VACCINATION

The only means of modifying or preventing smallpox is by means of vaccination.

When vaccination is carefully done, the vaccine pure, and the wound kept clean and covered until healed, serious results almost never occur.

The area to be vaccinated should first be washed with alcohol or soap and water and then dried. After the skin has been scratched and the vaccine applied, the wound should be covered with a shield or sterile gauze. When the vaccination begins to "take" the dressing should be removed daily and the whole area, including the vesicle, washed with alcohol and the dressing reapplied.

When serious infections occur it is always due to carelessness.

When vaccination has "taken" it is usually not necessary to repeat the process within seven years. Usually the second vaccination will "take lightly" if the first "took well."

If infants with eczema are vaccinated the greatest care must be taken to prevent them from scratching "the vaccination"; otherwise it may be spread over the entire body, with fatal results.

No child is too young to acquire smallpox, but

since exposure may occur at any time infants should be vaccinated during the first year.

KISSING

Such diseases as diphtheria, syphilis, tuberculosis, etc., may be readily transmitted by kissing.

Indiscriminate kissing should never be permitted, and when practiced the child should be kissed upon the cheek or forehead — never on the mouth.

HABITS

Infants as well as adults are creatures of habit. After habits have become fixed they are difficult to break. Since it is universally agreed that "an ounce of prevention is worth a pound of cure," infants should be allowed to form only good habits.

There are certain bad habits to which infants and children are addicted, the most important of which are thumb-sucking, bed-wetting, dirt-eating, facial movements, masturbation. These symptoms may have for their cause some diseased condition, and if not promptly righted by simple means, a physician should be consulted.

THUMB SUCKING

The habit of thumb or finger sucking is of course a natural one, but it becomes a vice when persisted

in. As a result, the mouth is frequently the seat of irritation or other catarrhal inflammations, the fingers or thumbs are deformed, and the front upper teeth are not infrequently displaced. If the habit has not been allowed to persist for long it is not difficult of correction.

To prevent the infant from sucking its thumbs or fingers the arms may be pinned to the sides, or cardboard splints applied at the elbow, allowing free movement but not permitting the hand to reach the mouth.

The Pacifier. The pacifier habit is a vicious one and should never be permitted. The mucous membrane is constantly irritated by contact with the rubber. It is a frequent source of infection, as it is usually dirty. The glands of the mouth are stimulated so that there is a constant flow of saliva, with more or less digestive disturbance. The best way to correct the habit is not to begin it, and if already formed, it should be stopped, even at the expense of considerable loss of sleep on the part of the infant and the household generally.

FACIAL MOVEMENTS

The different facial movements, such as blinking, drawing up the upper lip, sniffing, jerking the head, etc., have frequently some local irritation which is responsible for their beginning. Blinking is usually

caused by some irritation in the eyes or spasmophilia; drawing up of the lip, to some irritation in the nose.

These habits should never be allowed to become fixed. The cause should be at once sought and removed.

BED WETTING

Bed wetting in older children is sometimes a habit, but more often a weakness for which the child cannot in any way be held responsible.

When one can be sure that the cause is simply indifference, punishment may be efficacious; otherwise it does more harm than good. When the trouble occurs only during sleep the child should have plenty of fluid during the earlier part of the day and the fluids restricted greatly from four o'clock on. The child should be taken up (actually awakened) at ten o'clock and again in the early morning, if necessary. The hours at which it is awakened should always be the same. An improper diet (too many sweets) is a frequent cause of bed wetting, by producing irritation in the bladder and urethra from a concentrated urine. Infection of the bladder due to the colon bacillus is a common cause of incontinence, especially in girls. In such cases a careful microscopic examination of the urine should always be made. Suspected ab-

normalities of the genital and urinary tract, as possible causes, should always be referred to the physician for diagnosis and treatment.

MASTURBATION

This is a habit which is rather common to both sexes. It consists of irritating the genital organs with the hands, the clothing, or not infrequently by rubbing the thighs together. Infants less than a year old acquire the habit, so that "peculiar movements," which are often passed by the nurse as "smart," should be carefully scrutinized.

Any abnormal irritation about the genitals, lack of cleanliness, tight foreskin in boys, may be exciting causes.

In older children the habit is frequently acquired from others who practice it.

Young children should never be allowed to play together, or alone, without being observed. As soon as old enough to understand, children should be taught not to handle the genital organs, and given the reason why.

In intelligent older children the habit is usually not difficult to break.

Older children are not feeble-minded because they masturbate, but they may persistently masturbate because they are feeble-minded.

In young infants it is necessary often to restrain

the hands by tying them to the sides of the crib, or, if the irritation is produced by rubbing the thighs together, this may be overcome by any device which will keep the legs apart. Children should be observed until they go to sleep and after they awaken. Some plaything should always be at hand. Children will play with something, and if there is nothing else at hand they are apt to play with their own organs.

THE PROPER USE OF THE EYES

That the eyes shall perform their proper function throughout life, their care during infancy and childhood is of the greatest importance. In young children the long continued use of the eyes at any one time should be avoided. So much depends upon the muscular control that over-taxing of the eye muscles should be avoided.

The holding of picture books at improper angles is an important cause of muscular strain. The reading of books while the child is lying down always results in their being held at an improper angle, and should therefore be forbidden.

The proper lighting of the play-room is of the greatest importance. Artificial light should be avoided whenever possible. It is, however, much better to have artificial light, properly placed, than insufficient sunlight.

The windows in the play or schoolroom should be so arranged that the light comes in from behind or from above. Blackboards and charts should always be arranged so as to be properly lighted, without having the light shine directly in the child's eyes. Any inflammation of the eyes should be reported to the physician if it does not promptly clear up, by the application of a simple wash, such as boric acid solution.

ERRORS OF REFRACTION (DEFECTIVE VISION)

Many children have defective vision from birth. These errors may be of various kinds and may to the ordinary observer be difficult or impossible of detection. The most common defects are the following:

Improper muscle control.

Near sightedness.

Far sightedness.

Astigmatism.

These errors are frequently not manifested by marked symptoms until a child reaches the school age, when inflammation of the eye-lids, headache, or other nervous symptoms should lead the parent to have the child's eyes examined by a competent oculist.

The author has seen children so near sighted that

they were thought to be defective mentally. A pair of properly adjusted glasses was all that was needed to restore them to the normal.

MALNUTRITION. MARASMUS. SIMPLE ATROPHY

Not infrequently infants who have been badly fed, particularly upon artificial food, develop a condition known to the laity as "marasmus."

It often happens that the child is normal at birth and for a time, while on the breast, gains in weight.

Owing to the advice of some well meaning but illy informed person, the baby is weaned and put on an artificial food. From this time on, the baby begins to go down hill. All kinds of foods are tried, with the same result. These infants, after a time, look like little old men and women. The face is pinched and wrinkled and the skin, which is pale and dry, hangs in folds on the extremities. The abdomen is usually distended. The stools are large and ill smelling. If there is no disease such as tuberculosis or syphilis in the background, these cases may entirely recover.

The recovery will usually be slow, as a considerable time must elapse before the normal power of digestion and assimilation of food can be reëstablished.

Breast milk in these cases is of the greatest importance. If a wet nurse cannot be secured some breast milk should be procured and given the infant, combined with a properly modified diet adapted to its needs.

These infants are particularly prone to infections of the skin, which appear in the form of boils. These should be opened at the proper time; otherwise they are liable to produce serious general infection.

In addition to the food, fresh air and massage are valuable adjuncts in the treatment of these cases.

DELICATE CHILDREN

Not infrequently we meet children who have no particular disease but who are not well, and may be described as "delicate." Such a condition may be the result of bad inheritance or of a serious illness. More often, however, the condition is a direct result of bad feeding.

A searching examination should be made in order to eliminate a possible tuberculosis in these cases.

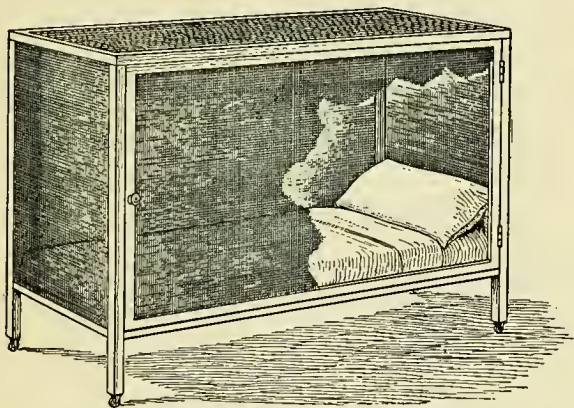
These children are prone to sit about and mope, take little exercise, and eat little at meals, with the exception of highly seasoned things and sweets.

They should be kept in the open air much of the time and should have regular exercises, including deep breathing. The food should be of the plain-

est character. Eating between meals should be forbidden and sweets should be practically eliminated.

They should not be crowded at school, but should have regular duties to perform at home.

A rest of an hour or so during the middle of the day should be insisted upon. This should come



SIMPLE SCREENED BED FOR OUT-DOOR SLEEPING

preferably after the noon day meal, which should be the hearty meal of the day.

Change of climate, particularly sea or mountain air, will sometimes do much to start these children on the road to recovery.

PUBERTY

Puberty is the transition period between childhood and adult life,

In girls there is usually a greatly increased growth both in weight and height, while in boys the gain both in weight and height is somewhat slower. After this period is passed the boys again forge ahead of the girls in both height and weight.

The following evidences of the approach of puberty will be observed:

In boys, a change of voice, beginning development of the beard, and a growth of hair under the arms and around the genitals.

In girls, a rapid gain in weight and height, development of the breasts, growth of hair under the arms and around the genitals, and the beginning of menstruation (12 to 14 years).

In warm climates and among southern races the age of puberty is rather earlier than in cold ones.

During this period the nervous system in both sexes is prone to be unstable, so that the general health of children should be maintained at the highest point. Many children are prone to sit around and read sentimental stories when they should be exercising in the open air.

Irregularity of menstruation in young girls is frequently due to faulty conditions of living (food, air, and exercise).

The old idea that girls are "sick" because they do not menstruate is putting the cart before the

horse. They do not menstruate usually because they are already sick.

A physician should always be consulted when any irregularities, either physical or mental, develop. There is no time during the child's life when "an ounce of prevention" is so applicable as during the age of puberty.

CLOTHING FOR OLDER CHILDREN

The clothing for older children should be suspended from the shoulders, but not from the points of the shoulders.

Properly made waists, with broad shoulder straps which come well up to the base of the neck, should be worn; upon these the stockings, drawers and trousers are suspended.

A light woolen undershirt should be worn, even in the summer. Children are particularly prone to become overheated during play, and in the cooling-off process they rarely use better judgment than do their older brothers and sisters. A woolen shirt will prevent many a cold and rob the doctor of many a fee.

Since practically all houses are warm throughout the year, heavy clothing should never be worn indoors.

Low temperatures out of doors should be met by an adequate amount of outer clothing.

TOYS

In selecting toys for babies one should always have in mind the fact that everything not too large goes promptly into the mouth.

Toys which can be kept clean easily, without detachable points or sharp edges, should be chosen. Painted toys should never be purchased.

Toys for older children should be selected not only as a means of amusement but also for their educational and disciplinary value. Plenty of wooden blocks of all sizes, from which the simplest to the most complex structures may be erected, are among the best. In addition, figures of people and domestic animals make a combination which gives endless play to the imagination and call forth real constructive ability.

The complicated mechanical toys have little real value; children quickly tire of them and nothing remains but the desire to take them apart in order to see what makes them go.

For girls, miniature houses with proper furnishings and cooking utensils, inhabited by dolls of various sizes, offer a wide and important field.

Children should never have many toys at a time, but should be allowed to exhaust the possibilities of one before another is given.

Habits acquired during the first five years are the

ones that abide. Children should therefore be required to put their toys away in some convenient but stated place when they are through with them.

Their garden tools, as well as wagons, carts, etc., should be put in a shed when the day's work is done.

There is no better way of acquiring the habit of orderliness and concentration than by the proper use and care of well chosen toys. The effects of this training will influence the whole character.

FOREIGN BODIES

When foreign bodies, such as buttons, pennies, etc., have been swallowed there is nothing to be done but watch the stools to see when they come through. This usually requires from three to seven days. Cathartics should never be given. Solid food, such as bread and potato, will often surround the object and lessen the irritation which sharp edges might otherwise produce.

When foreign bodies are stuck into the nose or ears an effort may be made to remove them, but unless great care is taken serious injury to the tissues may result.

It is usually better to take the child at once to a physician, and if the object cannot be otherwise located an X-ray picture should be made.

ENLARGEMENT OF THE BREASTS IN INFANTS (WITCHES MILK)

Occasionally new-born infants of both sexes have an enlargement of the breasts, with the secretion of a fluid resembling milk.

The condition is a harmless one and soon becomes normal if left alone. Massage and manipulation only do harm and may, if persisted in, produce a rather severe local inflammation.

CARE OF WOUNDS

Any wound, no matter how simple, may be followed by infection. That this does not usually occur is because most germs are not disease-producing and also because nature makes a strong resistance to all forms of infection.

It is important that every abrasion or cut be thoroughly cleansed. This can best be done with normal salt solution (one level teaspoon common salt to pint of boiled water). After the wound is clean it should be covered with sterilized gauze until healed. Freshly ironed clean linen is practically sterile.

The most dangerous simple wounds are what are known as punctured wounds. Such wounds are frequently received by children stepping on a nail. These wounds are not infrequently followed by tetanus (lock-jaw). The reason for this is that the

tetanus bacillus is frequently found in garden earth and horse manure. A wound received from stepping on a nail introduces the tetanus bacillus and when the nail is withdrawn the wound immediately closes, producing ideal conditions for the growth of the bacillus.

A child receiving such a wound should be taken at once to a physician and the wound should be thoroughly washed out and cauterized.

Wounds received from toy pistols are also followed frequently by tetanus because the "wads" in the cartridge are made from waste paper picked from the streets and frequently contain tetanus bacilli. If there is any probability that these wounds have not been thoroughly cleansed an injection of "tetanus anti-toxin" should be given at once. This serum is useless if given after the disease has developed.

Hemorrhage from wounds may usually be controlled temporarily by the application of pressure, or if on the extremities by a tight bandage or tourniquet above the wound.

MILK, FOR TRAVELING

For artificially fed infants the preparation of the milk for a railway journey of several days is not nearly so difficult as is generally supposed. For the first twenty-four hours of the journey the milk may

be prepared as usual, the bottles being kept in the icebox in the dining car and warmed when needed.

Milk for the remainder of the journey should be thoroughly sterilized by boiling for twenty minutes. The same principle may be applied as in canning fruits. The jars are thoroughly sterilized, including the covers, and then sealed while the milk is still at boiling heat. These should be kept on ice and opened only as required. It is better to use small bottles, each holding only enough for a couple of feedings.

When people can afford the luxury of trained attendants a small ice box containing the food may be taken along. The necessary ice may readily be procured on the train. At certain cities it is possible to arrange for a fresh supply of milk from the so-called milk laboratories.

When for some reason it is impractical to carry the necessary quantity of milk for a long journey, it is usually quite safe to give condensed milk.

It is always safe, however, to give an occasional feeding of the food, beginning several days before starting, in order to determine whether the infant has an intolerance of that particular food.

As soon as practicable the proper feedings should be resumed.

All water given the infant on the journey should be boiled.

TABLE SHOWING THE PERCENTAGE OF ALBUMEN, FAT, AND CARBOHYDRATE, WITH THE FOOD VALUE IN CALORIES IN ONE OUNCE OF THE FOLLOWING ARTICLES OF DIET (SEIFERT & MULLER).

	<i>Albumen</i>	<i>Fat</i>	<i>Carbohy- drate</i>	<i>Value in Calories</i>
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	
Mother's milk	1-1½	3-4	6-7	23
Cow's milk	2-3	3-4	4	23
White flour	11.0	1.3	74.2	120
Butter or other fat	1.0	83	—	260
Raw lean beefsteak	22	5.2	—	28
Raw fat beef	17	28	—	108
Raw veal steak	15	1.3	—	24
Fried veal steak	28	1.3	—	43
Roast pork	28	10	—	69
Boiled ham	24	36	—	146
Fried bacon	9	76	—	249
Baked chicken with stuffing	32	4.5	2.1	60
Shell-fish	24	0.5	—	34
One egg (1½ oz.)	6.5	4.9	—	76
Cream (thick)	3.5	25.5	3.5	87
Cheese (Swiss)	27.2	30.4	2.5	135
White bread	8.1	—	62.5	97
Baked or boiled potato ..	1.8	0.2	20.5	31
Dried peas	22.5	1.8	52.5	108
Rice (dried)	7.5	—	78.1	117
Meat soup0	0.8	—	7.5
Vegetable purée	3	6.5	20.5	53

DIETARY

Albumen Water. Stir whites of two eggs into one pint of cold water. (Do not beat.) Add pinch of salt. This food may be used in certain digestive disturbances for a short time instead of milk.

Barley Water.

2 Tablespoons pearl barley,

1 Quart cold water,

Bring to a boil, simmer one hour. Add sufficient water to make one quart. Strain through a cheese-cloth.

To make barley, oatmeal, rice, or arrowroot gruel, the same rule may be followed as for barley water, substituting the flour for the grain.

Lime Water.

1 teaspoon slack lime,

1 quart boiled or distilled water.

Stir thoroughly several times. Then allow lime to settle. The upper clear fluid is then ready for use.

Beef Juice. Broil a piece of lean beef slightly; press out the juice by means of a lemon squeezer or meat press. One pound of steak will yield from 2 to 3 ounces of juice.

To make Beef Juice by the cold process, take one pound of round steak, chopped fine, six ounces of water, pinch of salt. Place in a covered jar and put in a cool place for five or six hours. Then squeeze out the juice.

Mutton Broth.

1 pound chopped lean mutton with bone,

1 pint cold water,

Pinch of salt.

Simmer for three hours, until half a pint remains,

adding water if necessary. Strain through a muslin and when cool remove the fat.

Peptonized Milk. In a clean quart bottle put the powder contained in one Fairchild's peptonizing tubes, and add one-half pint cold water and a pint fresh milk. Shake the mixture thoroughly. Place the bottle in water at 115° F. and keep there for ten to fifteen minutes, then place on ice to prevent further digestion of milk. Milk which has been well peptonized will have a bitter taste.

When it is desired to absolutely stop the action of the peptonizing powder the milk should be brought quickly to the boiling point for a minute or two, after the temperature has remained at blood heat for ten to fifteen minutes.

Cocoa. Make a paste of one teaspoon each of cocoa and sugar and a little milk or water. Add to one cup of milk or water and boil three to five minutes.

Orangeade with White of Egg.

Juice of one orange,

White of one egg,

8 oz. cold water,

$\frac{1}{2}$ teaspoon sugar.

Mix thoroughly without heating. If desired the whole egg may be used.

Scraped Beef and Mutton. Take a tender piece of beef or mutton, broil slightly and scrape

with a sharp knife. Add a pinch of salt. From one-half to one tablespoon with other food may be given to a child of from eighteen months to two years.

Coddled Egg (Soft boiled without boiling). Place one fresh egg in boiling water, cover, let stand at the back of the stove 8-10 minutes. The white of the egg should be of a jelly-like consistency.

Milk Toast. To one cup of milk add one-half teaspoon cornstarch, one-half teaspoon butter, rubbed together; let come to boil. Pour over toast, and serve after it has stood long enough for toast to become soft.

Junket or Curds and Whey. Take one pint of fresh cow's milk, a pinch of salt, one tablespoon of sugar. Add one ounce Fairchild's Essence of Pepsin, Liquid Rennet or one Junket Tablet dissolved in water. Stir well. Raise to body temperature for twenty minutes, or until firmly coagulated. Place on ice until cold. This may be flavored according to taste.

Custard Pudding. Break one egg into custard cup, add a little sugar and mix well. Fill the cup with milk. Place in a shallow sauce-pan half pint of water and bake and boil ten minutes.

Other recipes required may be found in any good cook-book.

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Date Issued *Dye*

NOV 8 1935

~~DUE NOV 8 1935~~



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